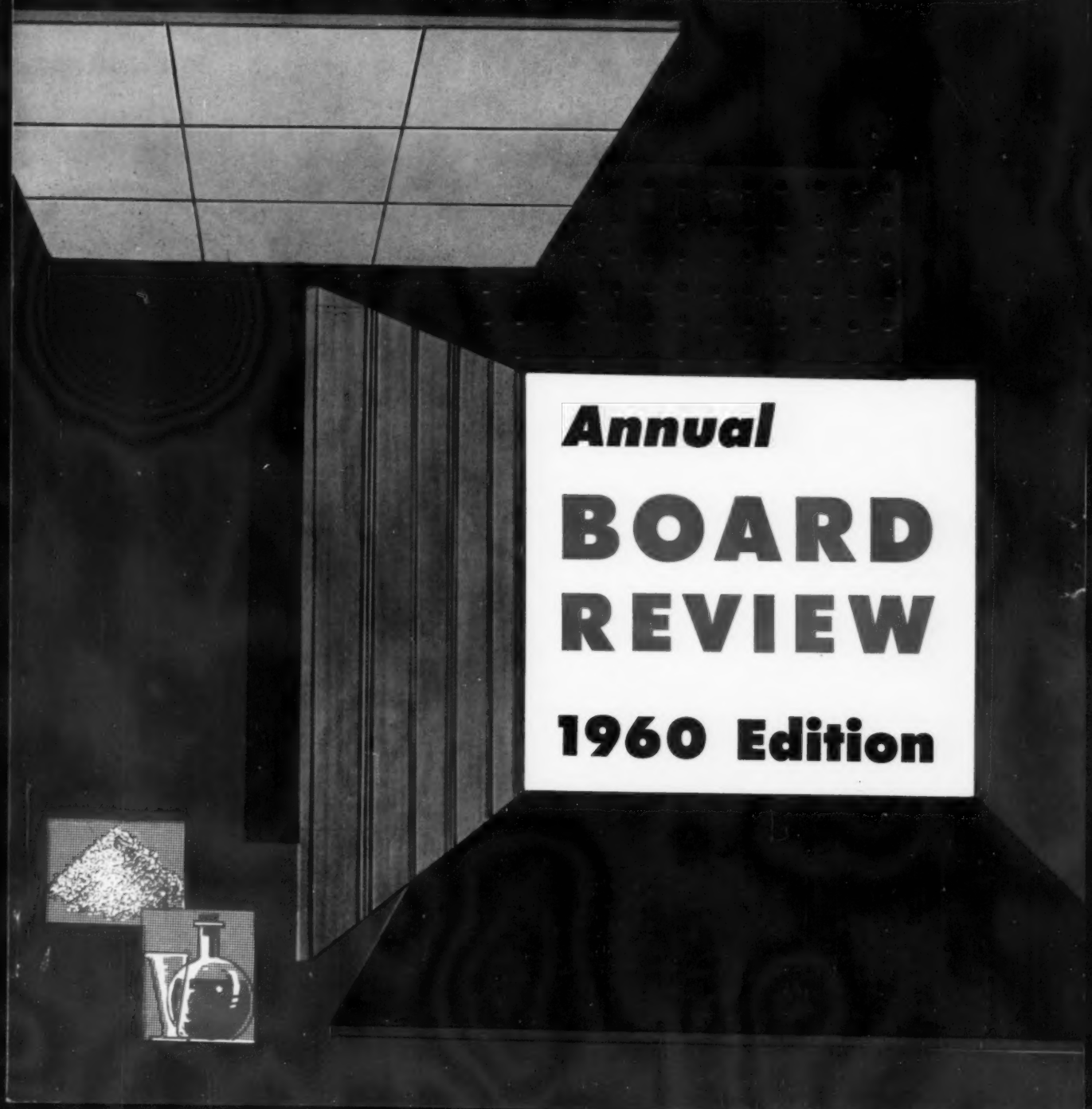
JULY, 1960

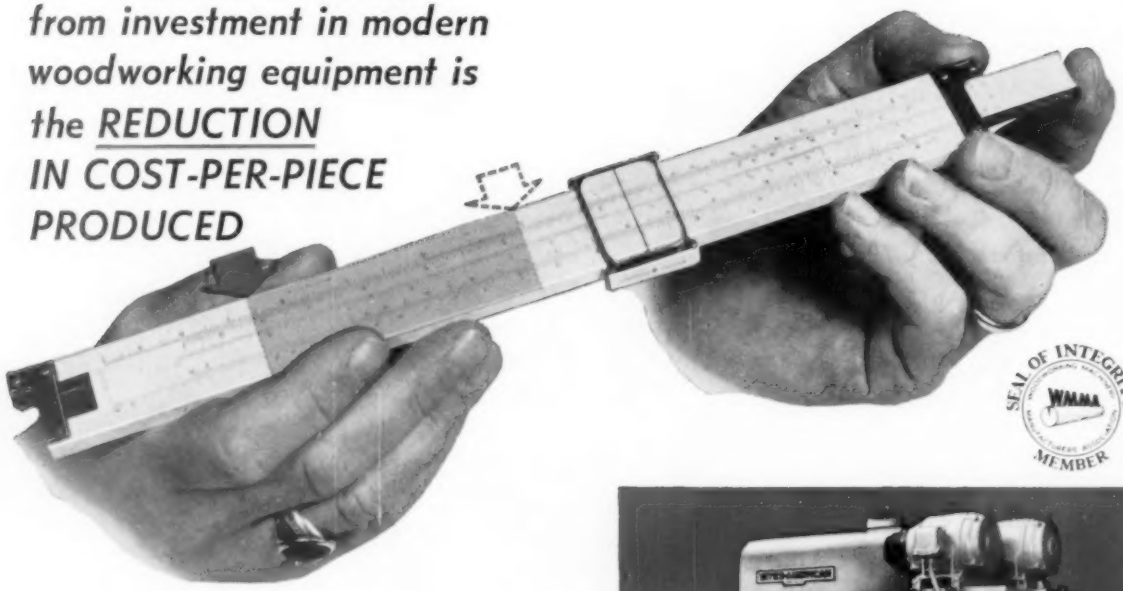
# THE Lumberman



## Annual BOARD REVIEW 1960 Edition

# former cost-reduced cost=SAVINGS!

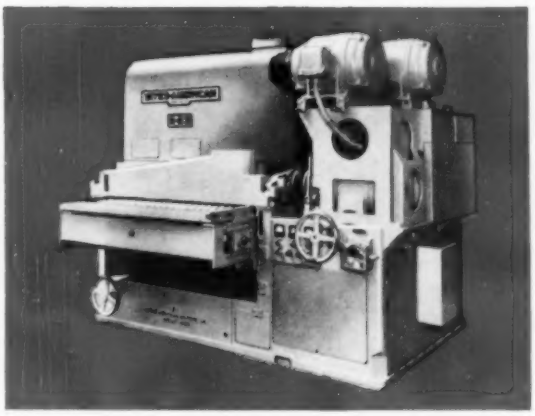
*true measure of savings from investment in modern woodworking equipment is the REDUCTION IN COST-PER-PIECE PRODUCED*



SEAL OF INTEGRITY WMMA MEMBER

Profits are established on the basis of the cost-per-piece produced. Investment in modern equipment that results in increased production volume or lowered production cost automatically reduces the cost-per-piece . . . and increases the profit. This increase measures the *Savings* resulting from the investment.

For example, the Model S-53 combination Drum and Belt Sander finish sands at speeds up to 90 feet per minute—*three times faster than the conventional drum sander* . . . and the improved finish obtained eliminates over 90% of the stroke sanding operations that ordinarily follow. At the same time the selective contact shoes for the sanding belts on the S-53 provides the proper pressures to produce the finest finishes — resulting in substantial improvement in the product.

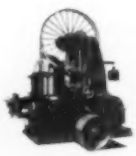


The Y-A Team has been assisting the woodworking industry in the solution of a broad variety of method and equipment application problems since 1883. Ask for Y-A Engineers to assist you without obligation.

SURFACERS

RIP SAWS

MATCHERS


RESAWS

JOINTERS

CIRCULAR SAWS

BAND SAWS

*Write today for new Bulletin S-53.*

YA

*Yates-American*

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## gives up to 10,000 hrs. service —
## *Only* HYSTER® has it!

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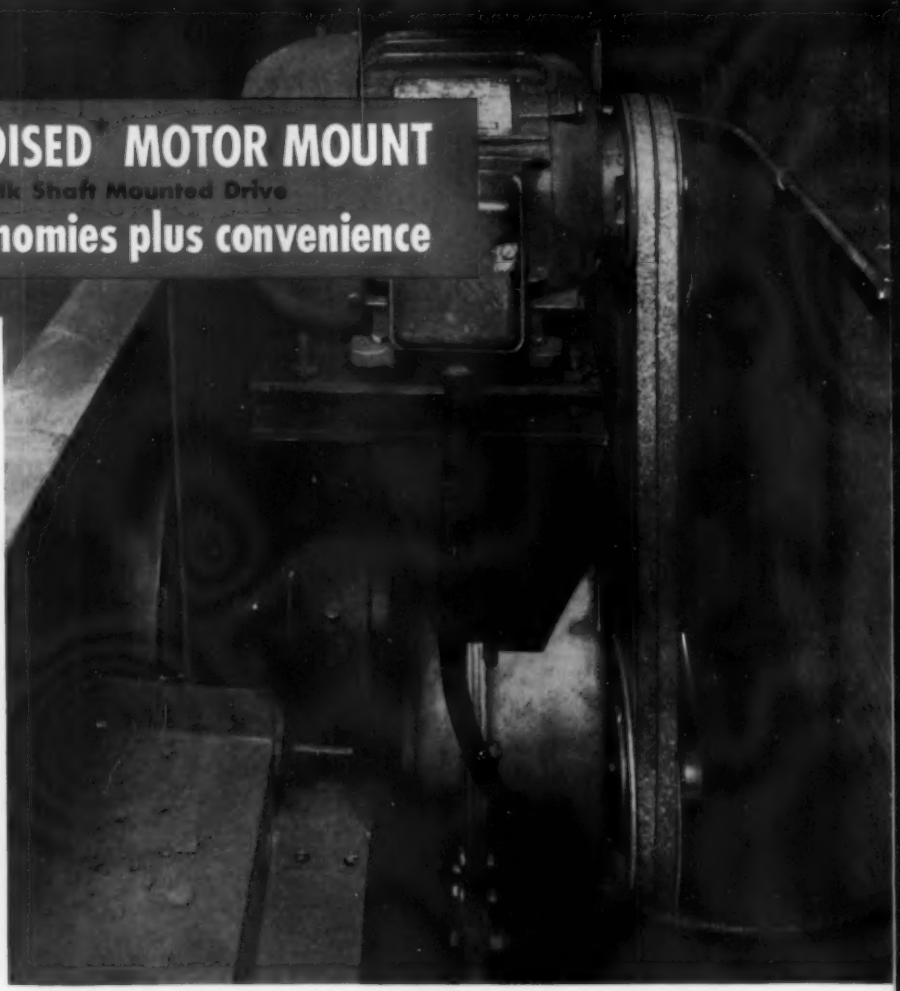
P. O. Box 847 • Danville, Illinois

# NEW FALK EQUI-POISED* MOTOR MOUNT

for use with the Falk Shaft Mounted Drive

## gives unequaled economies plus convenience

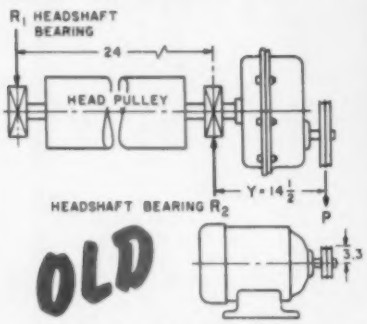


### HOW A FALK EQUI-POISED MOTOR MOUNT REDUCES BEARING LOADS ON A DRIVEN MACHINE

**GIVEN:** Motor—15 hp, 1750 rpm, Frame 284U, Weight—320 lb.
Sheave diameters—6.6/9.4
Driven machine—belt conveyor with 24" center distance between headshaft bearings.

**NOTE:** Weights of 307J24 Shaft Mounted Drive, sheaves, and V-belts are eliminated from calculations because they remain constant; do not affect the comparison.

### WITHOUT FALK MOTOR MOUNT




Torque at motor shaft = $\frac{63{,}025 \times 15 \text{ hp}}{1750 \text{ rpm}}$ = 540 lb-in.

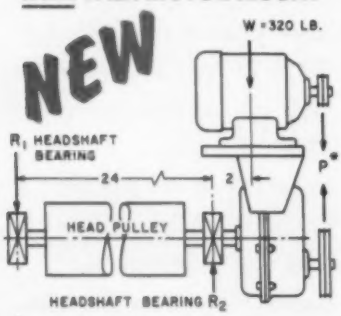
Belt pull (P) = $\frac{540 \text{ lb-in.}}{3.3''}$ x 1.5 Load Connection Factor
= 246 lb

$R_2 = \frac{246 \text{ lb} \times (24'' + 14.5'')}{24''}$ = 395 lb

$R_1 = \frac{246 \text{ lb} \times 14.5''}{24''}$ = 149 lb

(Check: 395 lb—149 lb=246 lb)

### WITH FALK MOTOR MOUNT




*P = ZERO REACTION AT HEADSHAFT BEARINGS

V-belt pull has zero reaction on headshaft bearings. Therefore—

$R_2 = \frac{320 \text{ lb} \times (24'' + 2'')}{24''}$ = 347 lb

$R_1 = \frac{320 \text{ lb} \times 2''}{24''}$ = 27 lb

(Check: 347 lb—27 lb=320 lb)

## Falk's new EQUI-POISED* Motor Mount is a

**rigid, all-steel weldment, pre-drilled for bolting standard NEMA foot-mounted motor (1/2 to 30 hp) directly to the steel frame of Falk Shaft Mounted, Flange Mounted and Screw Conveyor Drives. With it, motor can be mounted in almost any position around perimeter of reducer.**

*(*Balancing of forces.)*

### Substantial Savings for You

It saves engineering time required to design special motor bases and foundations...saves cost of labor and materials required to build special motor foundations...and saves on equipment costs by using a quality stock component. Further, its quick installation and easy maintenance mean added cost savings. The Motor Mount is a space saver, too. Where restricted space is a factor, ability to mount motor in any of several positions is an important convenience...For information on range of sizes, dimensions, etc., contact your Falk Representative or Distributor—or write direct for Bulletin 7100.

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*MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS*

**FALK**
...a good name in industry

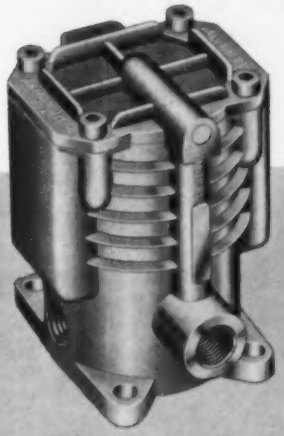
**Representatives and Distributors in most principal cities**

FALK is a registered trademark

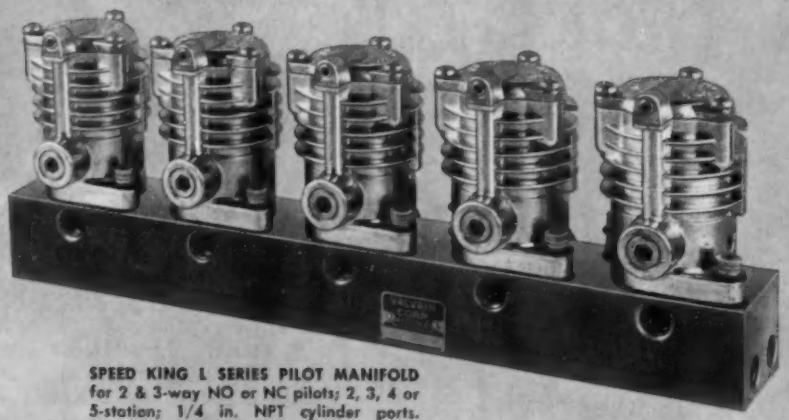
for dependable, economical control,
specify versatile...

# SPEED KING®

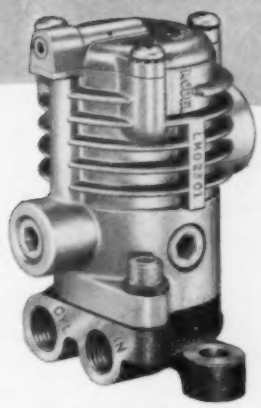
## SOLENOID PILOTS



**SPEED KING P SERIES PILOT** 2 & 3-way NO & NC, 4-way; foot, sub-base or manifold mounting; 1/8 or 3/16 in. orifices. Foot mounting shown.



**SPEED KING L SERIES PILOT MANIFOLD** for 2 & 3-way NO or NC pilots; 2, 3, 4 or 5-station; 1/4 in. NPT cylinder ports. 5-station shown.



**SPEED KING L SERIES PILOT** 2 & 3-way NO & NC; foot, sub-base or manifold mounting; 1/16 to 1/8 in. orifices. Sub-base mounting shown.

Compact Valvair® SPEED KING pilots are ideal for control of small air or vacuum-operated devices including cylinders up to 3 in. bore, as well as for piloting larger valves. Featuring Valvair's flow-thru cooling design, they offer multi-million cycle dependability, with solenoid coils guaranteed against burn-out for the life of the valve. Choose from a full range of types, mounting styles and sizes; integral junction boxes (L Series only) and manual over-ride optional; coils for ac or dc, any voltage.

Solve your small unit control problems with SPEED KING solenoid pilots. Your Valvair or Bellows Field Engineer can recommend a size and type exactly suited to your requirements.

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FOR FASTER · SAFER · BETTER PRODUCTION

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# THE Lumberman

LUMBER PLYWOOD BOARD WOOD MANUFACTURING

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• This Northwest Veteran Model 41 is one of the first of six Northwests purchased by the MacGregor Triangle Company of Boise, Idaho. This 20-year old rig has skidded or loaded over 400 million board feet of logs. Figure that up! That's 20 million board feet a year. In the off-season it has worked as a shovel to handle several hundred thousand yards of rock and common material. That's production, and a machine must always be ready to go to build up such a record.

We have always built them tough — but they are tougher today. The rugged Cast Steel Machinery Bases and Cast Steel Machinery Side Frames give you the foundation for handling heavy loads and maintaining the shaft alignment that reduces wear in the rough terrain a Log Loader encounters. Independent High Speed Boom Hoists are heavy duty and will give hour-in, hour-out, trouble-free service where continuous booming is a problem. Uniform Pressure Swing Clutches take the jerks and grabs out of swinging and assure smoother spotting to the truck or deck. The "Feather-Touch" Clutch Control is not affected by heat or cold nor does it require any adjustment. It gives the true feel of the load and ease of operation. Northwest Steering with positive traction on both crawlers, even while turning, takes your Northwest where other rigs have difficulty. — And remember it brings extra value to the man who buys it from you.

*There is a size to fit your logging problem whether in the woods or at the mill. Why not let a Northwest man tell you more about them?*

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3/4 to 3 Cu. Yd. Capacity

NORTHWEST

# significant industry news

## General Outlook . . .

WEYERHAEUSER ACQUIRING RODDIS PLYWOOD . . . General principles under which Weyerhaeuser Co. will acquire properties of Roddis Plywood Corp., have been agreed upon, executives of the two companies report. If concluded, the transaction will mark Weyerhaeuser entry into the hardwood field. Roddis manufactures such hardwood products as veneers, doors, lumber and plywood which are distributed through its own wholesale outlets. Weyerhaeuser has indicated that the Roddis business would be managed intact as a division. Roddis Plywood headquarters in Marshfield, Wis.

AMERICAN CAN BUYS ALABAMA HOLDINGS . . . The Allison Lumber Co., Inc., Bellamy, Ala., has been purchased by American Can Co., which operates Marathon-Southern Corp., a paper producer at Butler, Ala. The purchase includes 125,000 acres of the finest timber in the south, and a mill at Bellamy producing 120,000 feet a day. John O. Batson will continue as vice-president and manager of the Allison Co. Purchase price was not reported, but is rumored to be as much as $20 million.

PACIFIC LUMBER BUYS PLYWOOD PLANT . . . The Hampton Plywood Co. plywood plant at Englewood, Calif., has been purchased by Pacific Lumber Co., San Francisco, Calif. The plant produced an estimated 40 million square feet in 1959. Pacific says the purchase is in line with company plans for fuller utilization of its timber stands and wider diversification of its forest products sales. No changes in personnel are contemplated.

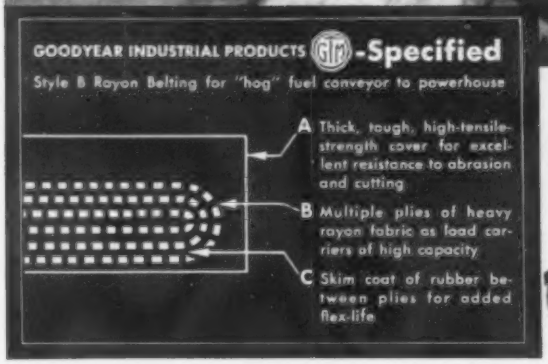
G-P ADDS TO HOLDINGS . . . A timber stand in southern Oregon covering 13,000 acres has been acquired by Georgia-Pacific Corp. The timber was bought by Coos Bay Timber Co., a G-P subsidiary, from Oregon Timber Co. which is owned by Ben B. Cheney, Tacoma, Wash., lumberman. Purchase price was not announced. The price could run as high as $10 million.

NOW IT'S AMERICAN HARDBOARD ASSOCIATION . . . The Hardboard Association at its semi-annual meeting in San Francisco, Calif., approved changing its name, and announced a concentrated six-month advertising program to stress the "plus values of brand name, American made hardboard products." The campaign will be directed at the builder-contractor user and the lumber dealer and will be carried in five trade journals serving these fields. At the meeting, many representatives voiced the opinion that more attention will be given to specialty products in the future. Such production will be tailored to end uses and will be accompanied by expanded technical and sales assistance.

MORE ON LUMBER FUTURES MARKET . . . If lumber futures trading (See SIGNIFICANT NEWS, June, THE LUMBERMAN) were established on the New York Mercantile Exchange, dealers could obtain commercial bank loans on lumber covered by future delivery contracts, predicts the CONSTRUCTION DAILY newsletter of McGraw-Hill. Also, dealers would be able to "draw on commercial banks' reservoir of loan funds at lower interest than they now pay to the factors who handle most lumber loans" the newsletter says.

More INDUSTRY NEWS on Page 8

**Service so severe it shredded a belt in only 3 seasons** was just part of the problem at this big Northwestern lumber mill. For there'd been almost constant maintenance problems, too—many of them over the belt's failure to track and trough properly. But then the G.T.M.—Goodyear Technical Man—appeared on the scene. His recommendation: install rugged yet flexible Style B Rayon Belting to carry their "hog" fuel to the powerhouse. Result: although the G.T.M.'s belt has already put in longer service than its predecessor, it scarcely shows a sign of wear. And even though it operates without a cover—exposed to summer rains and winter snows in turn—it's needed virtually no maintenance of any kind.


GOODYEAR INDUSTRIAL PRODUCTS GTM-Specified
Style B Rayon Belting for "hog" fuel conveyor to powerhouse
A Thick, tough, high-tensile-strength cover for excellent resistance to abrasion and cutting
B Multiple plies of heavy rayon fabric as load carriers of high capacity
C Skim coat of rubber between plies for added flex-life

To head off a costly trial-and-error experience with any kind of industrial rubber product, check over your problem with the G.T.M. *first.*

That way, he and your Goodyear Distributor can start you off with the V-Belts, Hose or other products designed to give you the longest service—with the least maintenance—at the lowest over-all cost. Just look under "Rubber Goods" or "Rubber Products" in the Yellow Pages—or write Goodyear, Industrial Products Division, Akron 16, Ohio.

**Lots of good things come from**

**GOODYEAR**

**INDUSTRIAL PRODUCTS**

NEW MICROSEAL PROCESS . . . General Plywood Corp., Louisville, Ky., has announced a new microsealing process . . . Super Satin Surface . . . which produces a slightly densified, highly glossified surface on plywood and boards. A continuous production machine, utilizing heat and pressure, applies the surface to any species or type of board.

FASTER HANDLING OF WIDE MOUTH DOORS . . . The National Lumber Manufacturers Association has been asked by the Association of American Railroads to help promote prompt loading and unloading of wide-door box cars to stretch available supplies. The AAR says the number of such cars in service is not fully adequate to meet needs. More than 70,000 cars of special design to facilitate loading and unloading have been acquired by railroads in the past six years, and more than half of the 13,739 cars now on order are of the wide-door, 50-foot variety, AAR says.

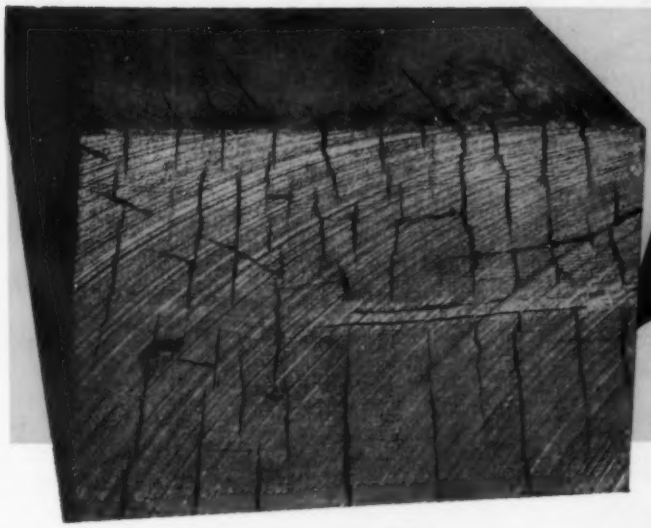
STOCK OFFERED EXECUTIVES . . . Corporate executives and sales warehouse managers of Aberdeen Plywood & Veneers, Inc., Aberdeen, Wash., may buy stock in the company under a plan announced by Mon Orloff, president, who said "since it will be primarily through their efforts that our company will prosper and grow, we are offering them the opportunity to participate in our growth as owners." Future expansions are planned. The Harbor Plywood facilities, recently purchased, will be expanded in the next 18 months by six to eight more warehouses. Construction is underway on a flakeboard plant and also under consideration are a pre-finishing plant, a chemical plant to manufacture adhesives and a high pressure laminate plant.

SAFE GLUE-LAM TIMBERS . . ."Glued-laminated timbers will retain their strength and shape in a fire longer than many other common building materials," H. E. Thompson, Canadian Wood Development Council engineer reported at the National Fire Protection Association meeting in Montreal. No building is actually fireproof or even invulnerable to fire damage. "We need more emphasis on protecting the people and goods inside building and less reliance on so-called fireproof structures." To provide this protection, collapse resistance is most important, Thompson said, and "modern timber construction will provide more resistance to collapse that many non-combustible structures."

WEIGHT-SCALING SUCCESSFUL . . . Tests by the Southern Forest Experiment Station and the Woodlands department of Olin Mathieson Chemical Corp. on shortleaf and loblolly pines logs from Louisiana and Arkansas indicate that weight-scaling is as accurate as stick-scaling. It is faster and involves less personal judgment. A report on the test suggests that weight-scaling is suitable for the southern pine region, but that individual mills will have to develop factors for their local conditions. Results of the study, Occasional Paper 117, "Weight-Scaling Southern Pine Saw Logs," are available from the Southern Forest Experiment Station, 2026 St. Charles Avenue, New Orleans 13, La.

MORE ALUMINUM COMPETITION . . . Aluminum Company of America has added vertical siding to its recently announced line of horizontal residential siding. It will be available in dark green, light green, maroon, white and grey. Alcoa says it will back the new product with *the most comprehensive promotion and advertising campaign ever initiated in the residential siding industry.*

**More INDUSTRY NEWS on Page 10**



End checks are expensive!

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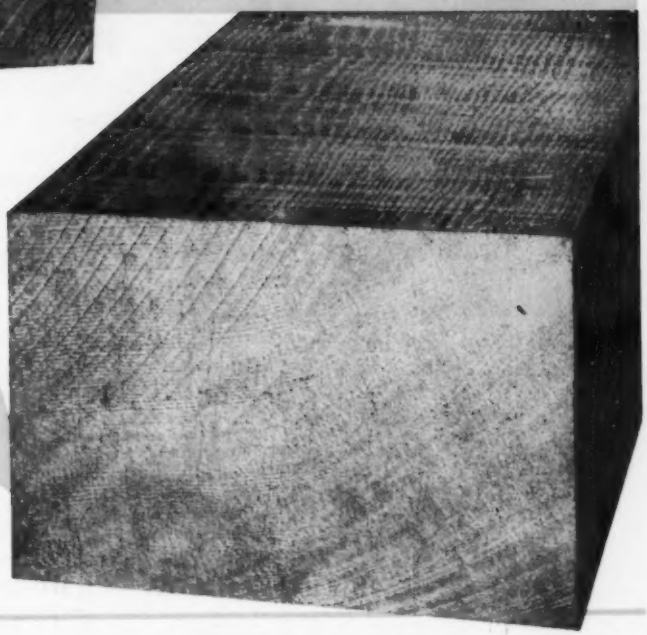
SEALTITE prevents them!



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Memphis 1, Tenn.

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Address_____

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## On the Plant Front . . .

AUSTRALIAN MILL OPERATING . . . South Australian Wood and Forest Department has started production at its new mill in Mount Gambier in southern Australia, believed to be the largest in the country. Production is estimated to run 22 million super feet of sawn products a year. The extensive plant cost 2 million pounds (Australian). Major species handled will be radiata pine. About 40% of the output will be in finished products.

MILL REBUILDING PLANNED . . . The John F. Cawrse Lumber Co., Remote, Ore., destroyed by fire early in June, will be rebuilt, says owner John F. Cawrse. Loss in the fire is estimated at $250,000. Cawrse recently purchased 10 million feet of timber to supply the plant.

NEW OREGON VENEER PLANT . . . Pope & Talbot, Inc., is building a $400,000 green veneer plant at Oakridge, Ore. and plans to have it in production by mid-December. The plant is expected to use 10 million feet of logs a year. Output will be sold on the open market.

ANOTHER MONTANA PLYWOOD PLANT . . . St. Regis Paper Co. says its J. Neils Lumber Co. division will build a plywood plant at Libby, Mont. Construction will be started in April, 1961, and production is expected by the end of the year. The plant will utilize Neils' forest resources in the state, which include large stands of larch and fir. A plant with a capacity of 60 million square feet, 3/8-inch basis, a year, is seen. Neils operates several wood processing plants at Libby and Troy, Mont.

WORK STARTED ON NAVAJO MILL . . . The $7.5 million Navajo Tribal sawmill in New Mexico is under construction. Work has also started on the community of Navajo which is being built in conjunction with the lumber processing center. The sawmill and related manufacturing facilities are expected to be operating in a year. Over-all plans call for a board plant at a later date. The location is just inside New Mexico, a few hundred feet from the Arizona-New Mexico border, and 15 miles from Fort Defiance, Ariz.

NEW IDAHO MILL OPERATING . . . The Hodgson brothers have started production at their new sawmill in Benewah Valley about 20 miles from St. Maries, Ida. The all-electric band mill will have a capacity of from 20,000 to 25,000 feet a shift. Principals in the firm are brothers Thomas, Donald and Myron.

## Personalities . . .

SOUTHERN GROUP ELECTS . . . Re-elected officers of the North Carolina Forestry Association's Furniture, Plywood and Veneer Council at its annual meeting were J. C. Liebhart, Drexel Furniture Co., Morganton, chairman, and R. B. Johnston, American Furniture Co., North Wilkesboro, vice-chairman.

OREGON RILCO MANAGER . . . Guy H. West, Jr., will manage the Rilco Laminated Products plant at Cottage Grove, Ore. West has been with Weyerhaeuser Co. at Longview, Wash., since 1945 and has worked in the laminating plant there.

CANADIANS ELECT . . . Wes Hall of Glulam Products, Ltd., is new president of the Canadian Institute of Timber Construction, succeeding W. K. Nichols, Timber Preservers, Ltd., Vancouver, B. C. Hall is one of the founders of the association.

## CALENDAR OF COMING EVENTS

**JULY**

National Plywood Distributors Assn., annual meeting, July 1-5, Sun Valley, Ida.
Philippine Mahogany Association, Inc., July 10-14, Wentworth Hotel, Portsmouth, N. H.
Appalachian Hardwood Manufacturers, Inc., July 14-15, summer meeting, Cavalier Hotel, Virginia Beach, Va.

**AUGUST**

Ponderosa Pine Woodwork, August 2-4, summer meeting, Fairmont Hotel, San Francisco, Calif.
Columbia River Log Scaling & Grading Bureau, August 8, annual meeting, Benson Hotel, Portland, Ore.
Forest Tree Nurseryman's Meeting, August 17-18, Savenac Nursery, Haugen, Mont.
TAPPI Forest Biology Symposium, August 24-26, New Washington Hotel, Seattle, Wash.
National Christmas Tree Growers Association, August 25-27, annual meeting, Purdue University, Lafayette, Ind.
Fifth World Forestry Congress, August 29-September 16, Seattle, Wash.

**SEPTEMBER**

Lake States Logging Congress, September 8-11, Rhinelander, Wis.
Northwest Hardwood Association, annual meeting, September 9-10, New Washington Hotel, Seattle, Wash.
Western Pine Association, September 14-16, semi-annual meeting, Multnomah Hotel, Portland, Ore.
American Ladder Institute, September 19-22, annual meeting, Grove Park Inn, Asheville, N. C.

**OCTOBER**

National Hardwood Lumber Association, annual meeting, October 3-6, Hotel Sherman, Chicago, Ill.
Hardwood Plywood Institute, October 5-7, Dinkler Plaza Hotel, Atlanta, Ga.
Architectural Woodwork Institute, October 11-14, Sheraton Park Hotel, Washington, D. C.
American Forestry Association, October 16-19, Edgewater Gulf Hotel, Edgewater Park, Miss.
National Forest Products Week, sponsored by Hoo-Hoo International Wood Promotion Committee, October 16-22.
National Safety Council, October 17-20, Chicago, Ill.
National Institute of Wood Kitchen Cabinets, Oct. 20-23, annual meeting, Quebec, P. Q.
Canadian Institute of Forestry, Oct. 24-27, annual meeting, Quebec City, Que.
Pacific Logging Congress, Oct. 26-28, annual meeting, Hotel Vancouver, Vancouver, B. C.
Railway Tie Association, Oct. 26-28, annual meeting, Statler Hilton, Cleveland, Ohio.

**NOVEMBER**

American Forest Products Industries, Inc., Nov. 2-3, annual meeting, Shoreham Hotel, Washington, D. C.
Hardboard Association, Nov. 10-11, annual membership meeting, Drake Hotel, Chicago, Ill.
Society of American Foresters, Nov. 13-16, annual meeting, Washington, D.C.
Southern Sash & Door Jobbers Association, Nov. 13-15, annual fall meeting, The Greenbrier, White Sulphur Springs, W. Va.
National Lumber Manufacturers Association, Nov. 14-16, annual meeting, Shoreham Hotel, Washington, D. C.

**Log-handling is cheaper by the load**

This 60-foot span crane was "job-engineered" by EDERER for service at a paper mill. It moves logs from the pond or unloads from trucks or cars to the log deck . . . handles full loads at one lift—up to the crane's 50-ton capacity. This faster, smoother log-handling saves time and money.

The crane has double drum fixed hoist and spreader bar. The bridge moves from pond, over tracks and to log deck. Hoist and controls are completely housed for service in any kind of weather.

EDERER "job-engineers" equipment for the forest products industries for many such specialized uses. Why not discuss YOUR special job requirements with an EDERER engineer?

*Inquire about our complete line of light duty cranes from 3- to 20-ton capacity.*

EDERER Cranes

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EDERER ENGINEERING COMPANY
2933 FIRST AVENUE SOUTH • SEATTLE 4, WASHINGTON
EXPORT DIVISION: 301 Clay Street, San Francisco 11, California

*Since 1901* — "JOB-ENGINEERING" CRANES AND HEAVY EQUIPMENT

*four-year record results in re-order of*

# LeTOURNEAU . . .

## *SIMPSON REDWOOD COMPANY BUYS TWO ADDITIONAL Le TOURNEAU STACKERS*

Two new LeTourneau Series F 30-ton Log Stackers have been ordered by Simpson Redwood Company. The four-year record of four other LeTourneau Log Stackers at their Klamath and Korbel mills show that while operations increased 100%, mill yard manpower decreased 50%.

Simpson's versatile LeTourneau Log Stackers average handling over 1 MM BF of logs per day—unloading trucks, sorting by species, decking, feeding the mill and reloading highway trucks. In addition to savings in manpower and equipment, a drastic reduction in log breakage provides an added bonus.

The proven LeTourneau System puts flexible electric power at every work point . . . all four wheels, braking, steering, fork-lift winch, tusks, tilt and cable kicker. Fingertip switches control every operation.

**Write for detailed information on how a LeTourneau Log Stacker can solve your log handling problems. There's no obligation.**

Series F LeTourneau Log Stacker reloads highway truck with 7,000 bf of logs for transit to plywood mill.

One of the two 60-ton LeTourneau Log Stackers owned by Simpson Redwood Company unloads off-highway truck.

# SERIES F LOG STACKER

## BETTER LOG HANDLING BECAUSE OF THESE ADVANCED FEATURES

- Fully-enclosed cab, rotating control panel and seat
- Cable kicker easily removes all logs from forks
- Nickel-chrome alloy steel construction gives greater strength
- New car and mast structure provides smoother operation—longer life
- Tusks open wider for easier log handling at decks

R.G. LETOURNEAU INC

2547 S. MacARTHUR, LONGVIEW, TEXAS

L-160

## For perfect plywood . . .

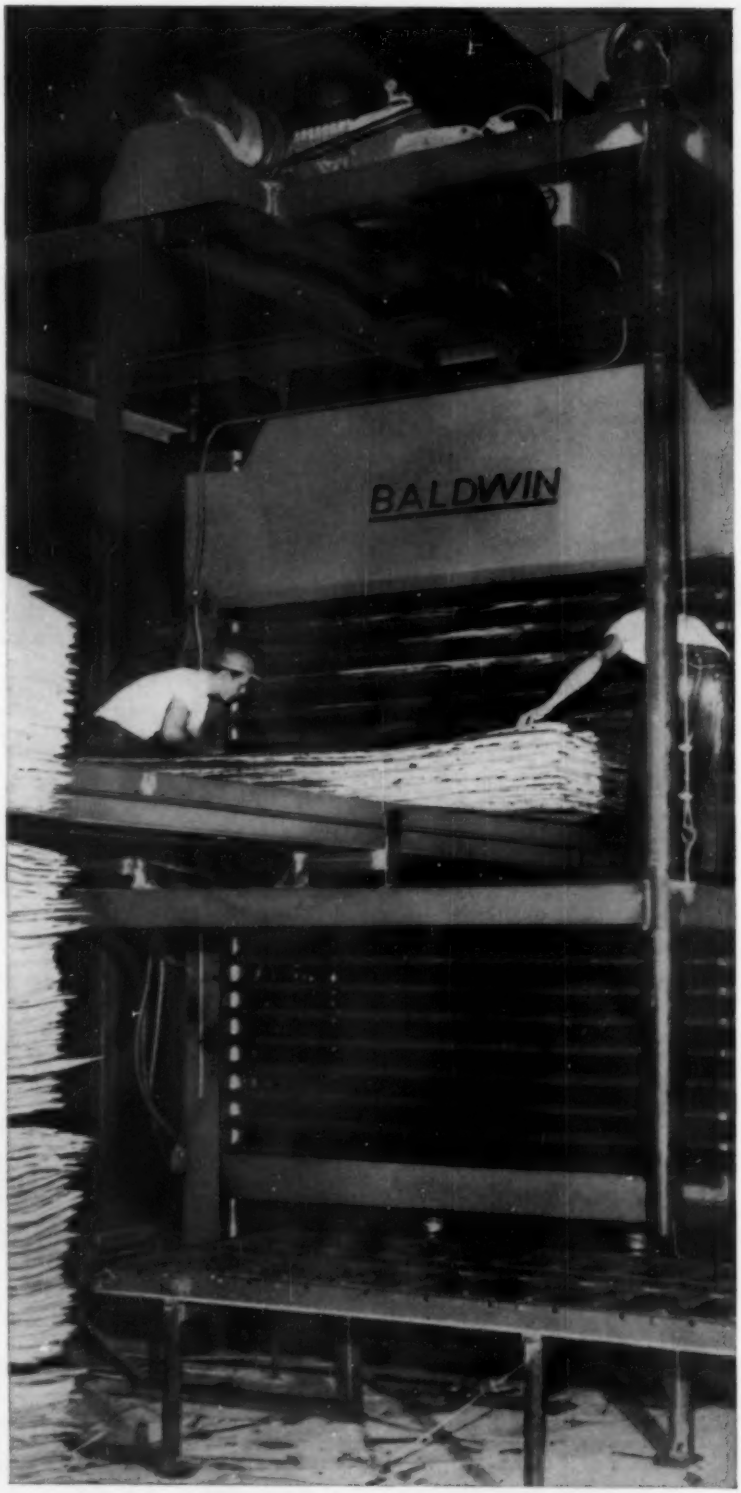
# ANOTHER BALDWIN HOT PLATE PRESS

More than 20 Baldwin hot plate presses have been delivered to plywood and particle board manufacturers during the past 12 months. And there is a reason: the competence and craftsmanship that go into every part of a Baldwin press — plus the way excellence has of being found out and sought after.

**Some of the points that make them choose Baldwin**

- Fast closing speed
- Precision cycling and opening
- Uniform temperature across all plates
- Thick 1-piece high-carbon plates to help insure long productive life
- Single pump system for minimum valving
- Taper-nose leading edges to help speed loading
- Step hanger and guide bracket design to help keep maintenance time and costs way down

As all these board producers can attest, Baldwin hot plate presses assure dependable, profitable production of plywood, particle board, flakeboard and composition board. And bear this in mind — expanded facilities at our new Industrial Equipment Division assure early delivery and continued high standards of manufacture. Send for detailed information and specifications.




Operators loading a 20-opening, 570-ton Baldwin plywood press at KVV California Mills, Inc.

BALDWIN · LIMA · HAMILTON

Industrial Equipment Division · Philadelphia 42, Pa.

**1st IN INDUSTRIAL LEADERSHIP**
**1st IN RESEARCH**
**1st IN NEW PRODUCT DEVELOPMENT**
**1st IN QUALITY**
**1st TO SET THE STANDARD FOR EXCELLENCE**

LEADERSHIP in industry is recognized and maintained by the excellence of that industry's product line. Pacqua has assumed that leadership responsibility in the Particleboard field and has steadily widened the gap over competitors in research, product, development, and standards—First with Par-WOOD interior, Par-TEX exterior, and Par-TILE natural wood block flooring. Then in close succession Duo-Face Par-WOOD, IRB Insect Repellent Board, Par-TEX 3-D V-grooved siding, Par-DeLux Pre-filled and finished Par-WOOD and Par-WOOD Veneer Overlay. Now Pacqua announces the new Par-TILE Tongue and Groove Block flooring with a full ⅜-inch thickness. These then are the products responsible for Pacqua's place at the top . . . 1st in Industrial Leadership . . . 1st in Research . . . 1st in Product Development . . . 1st in Quality . . . and 1st to Set the Standards for Excellence in the Particleboard Industry.

*Manufactured by:*
*Pacqua* Division
Pacific Plywood Co.
DILLARD, OREGON

Charter Member
National Particleboard Association
West Coast Particleboard Association

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# Improved Particleboard Is Needed

## if the product is to gain a more universal use.

By PAUL R. WALSH
Particleboard Technologist and Consultant for The Chemical Process Co., Eugene, Ore.

It seems safe to say that we must now consider particle board at a crossroads. Being able to produce a large quantity of material must now be balanced with attention to the research and development of diversified quality products. Just to provide a product which is satisfactory for an application, providing that a number of limitations can be overcome, will not attain the broad markets that this industry requires to continue its expansion.

To really achieve its rightful place in the spectrum of forest products, particle board must now develop into a more universally applicable material. For instance, it may be sufficiently strong for most interior applications, but it must be much stronger and more durable before it can be used for anywhere near the number of applications, and with the utility that lumber and plywood are used.

**Significant improvements** in product quality in the past few years are difficult to point out. We can point to adhesives which give us a faster press cycle and some improvements in board properties. We speak of better flakers and better dryers and felters. All of these things are important evolutionary contributions to the improvement of the industry.

Needed in addition to evolutionary developments, is a truly revolutionary progress in product development. Two major areas of concern are the stability characteristics of individual particles and general surface properties of the product. These two areas deserve concentrated attention. If we could significantly limit expansion and contraction of individual particle elements within a board structure under various conditions of exposure, we could have a board with physical characteristics far more universally applicable.

Somewhat the same problem exists for board surfaces. We see a trend in the industry toward coatings. These coatings are designed to make the product more suitable for such subsequent operations as painting, laminating and machining.

Particle board offers a unique opportunity to produce products that are truly superior for a wide range of industrial and construction applications. We must prepare to provide hard, durable surfaced materials which can be worked easily and economically.

**To improve the product,** it is necessary to have a good foundation in the

*(Continued on page 60)*

**produce more uniform chips... reduce downtime and waste with WAPAK *Hi-Production* CHIPPER KNIVES** Wood room costs go down — when you install WAPAK Hi-Production Chipper Knives. Production is more uniform with fewer splinters and oversize chips . . . less dust. Knife edges stay sharp longer without reconditioning.

Check these features. You'll see why WAPAK Hi-Production Knives mean top quality chips . . . extra hours of full capacity operation:

1. One-piece solid alloy tool steel gives greatest strength and lasting sharpness.
2. Special heat treatment conditions steel to absorb shocks . . . softer around slots . . . reduces breaks.
3. Keen knife edge and smooth face are precision ground for clean cutting. When necessary, sharpening is easy . . . fast.
4. Available in every size, single or double bevel. Engineered to fit the particular job.

*Write for complete free catalog*

THE WAPAKONETA MACHINE CO.
*Knives Engineered for the Job Since 1891*
Wapakoneta 3, Ohio

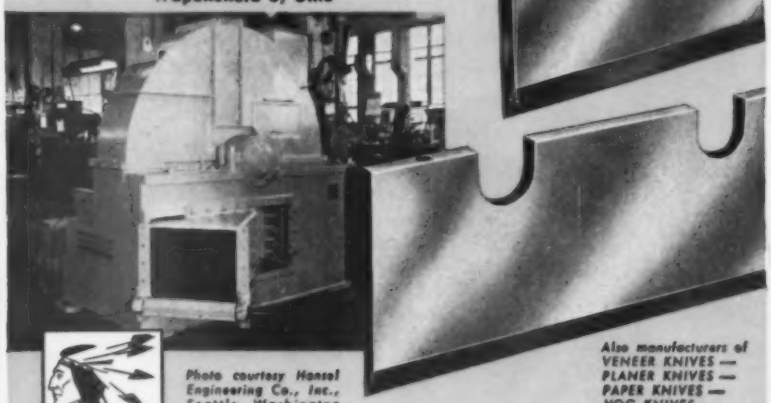

*Photo courtesy Hansel Engineering Co., Inc., Seattle, Washington*

*Also manufacturers of*
*VENEER KNIVES —*
*PLANER KNIVES —*
*PAPER KNIVES —*
*HOG KNIVES*

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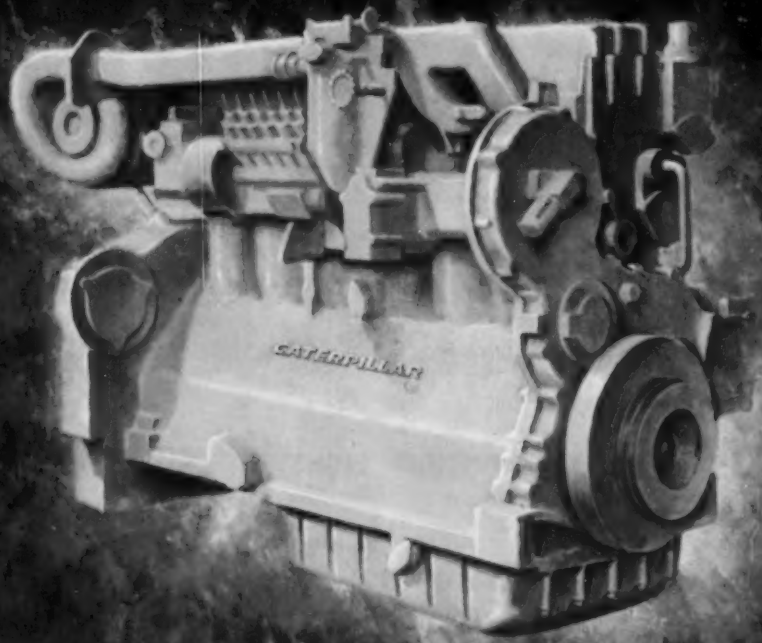
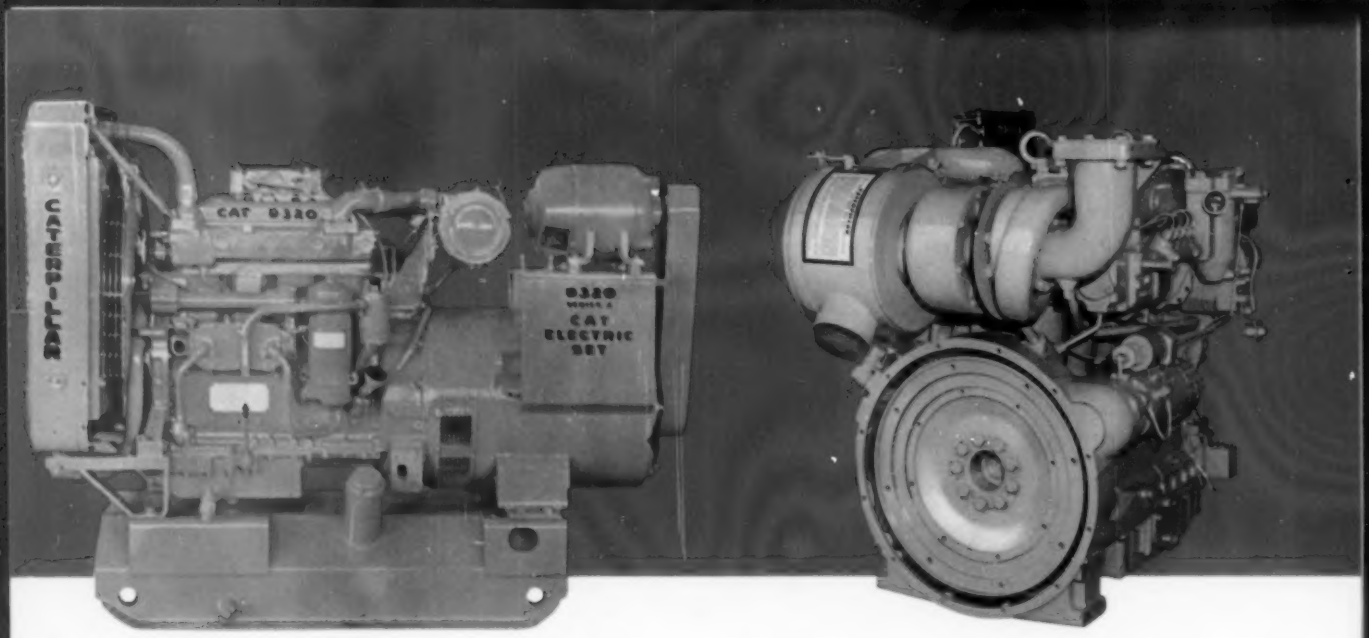



# NEW COMPACT DIESELS BY CATERPILLAR

**Caterpillar announces a new line of four-cycle diesels that sharply reduces physical dimensions and weight-to-horsepower ratio. Features of durability, fuel economy and dependability, long associated with Caterpillar four-cycle diesels, are still apparent.**




**D320...130 HP**
(Shown as Electric Set*)

**D330...180 HP**
(Shown as Industrial Engine*)

## NEW FROM CATERPILLAR—HIGH OUTPUT, LIGHTWEIGHT, COMPACT DIESEL ENGINES

Since introduction of the first mobile diesel engine in 1931 Caterpillar engineers have been testing materials and methods to reduce diesel size and weight and at the same time develop more horsepower. Three products of this program are the new D320, D330 and D333. Their size, performance and price now offer significant and increased economic return to the user.

Now you can get premium four-cycle performance . . . and what is very important to you . . . at no premium in price.

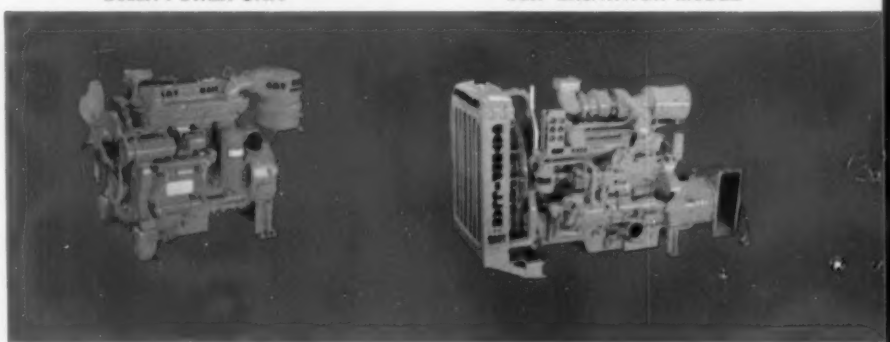
These engines and the rest of the Cat Diesel line are designed for your job or manufacturers' equipment whether it be industrial, electric power generation or marine.

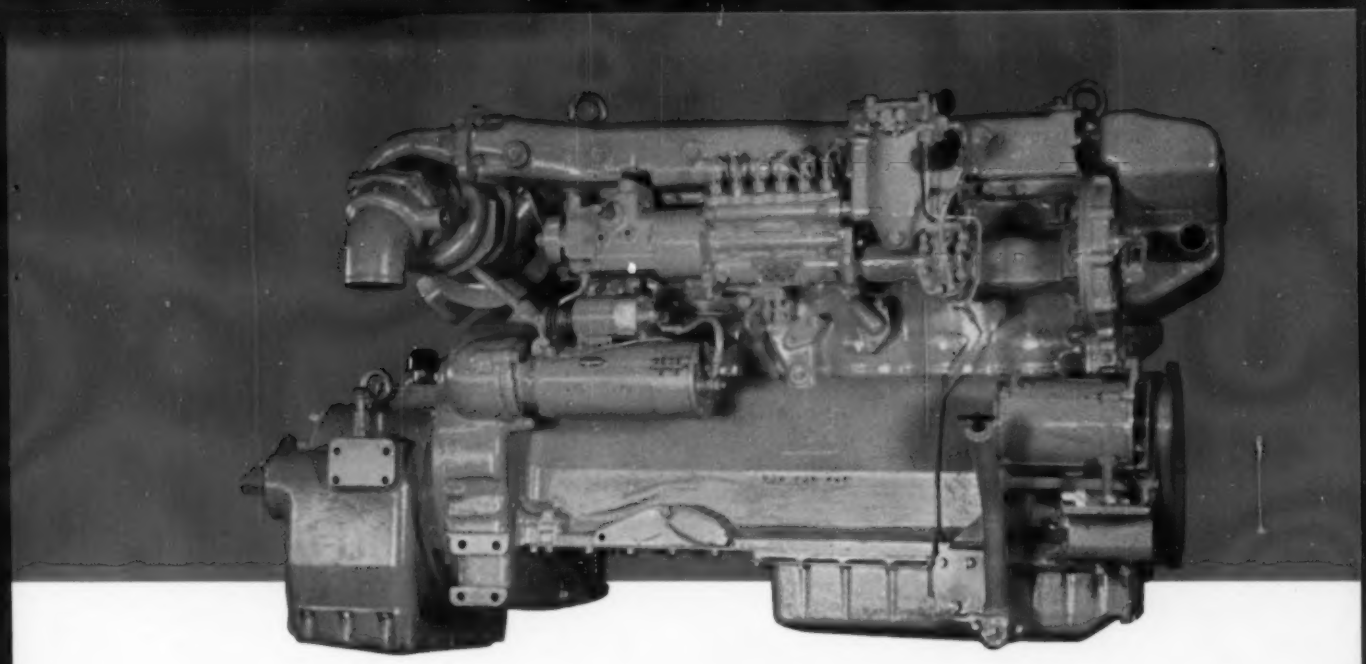
Shown below are more models. Space prevents the illustration of Caterpillar's complete line running to hundreds of configurations.

Caterpillar manufactures a full line of diesel and natural gas engines. Diesels range in horsepower up to 730; output of the largest electric set is 400 KW. Diesels are available in industrial, electric set and marine versions. Caterpillar also manufactures the lowest cost per horsepower natural gas engine on the market today. Hundreds of thousands of Cat Diesel predecessors to the new series have set performance and economy records, the world over.

D311H POWER UNIT

D337 EXCAVATOR MODEL





## D333 . . . 270 HP
## (Shown as Marine Engine*)

*All available in industrial, electric set, or marine configurations. These are maximum usable horsepower ratings with 85° water to aftercooler.

**GOOD SERVICE LIFE** Valve rotators insure perfect valve seating, give extended valve life. Turbocharging helps keep valve temperature lower. Pistons are spray cooled from underneath and cylinder liners are full length, wet type for better heat transfer. These features and many others such as elliptically shaped pistons and shot peened, fatigue-resistant crankshafts make this series dependable performers.

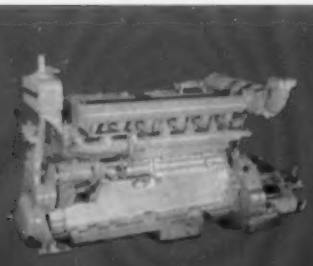
**SMOOTH AND QUIET RUNNING** All of these engines are smooth running. The four-cylinder D320 and D330 have built-in balancers that remove the roughness characteristic in four-cylinder engines. Turbocharging muffles exhaust noises to a point where mechanical muffling or insulation is not often needed.

**ECONOMICAL** These engines have a precombustion chamber injection system design which is non-sensitive and lets the engine digest lower-cost, heavier, higher-heat-content fuel. Being able to burn fuel such as commonly available household furnace oil compared to gasoline or premium diesel can save many thousands of dollars in fuel costs over the life of the engine.

**DEPENDABLE** These engines can idle for extended periods, then accelerate to full load and speed with a clean, clear exhaust. This ability to burn fuel completely over a full range of speed and load is the result of four-cycle design plus the use of a precombustion chamber injection system. It results also in better part load fuel economy.

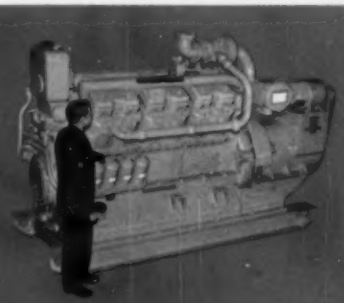
**POWERFUL** The specification sheet horsepower is the horsepower you can use. There is no need for derating with a Cat Diesel. In fact, you can request and get a formal horsepower certification with each engine you purchase.

D342 MARINE



G375 NATURAL GAS

D397 ELECTRIC SET



Completed in 1959, the new Mossville, Illinois, Industrial Engine Plant manufactures Cat Engines on a mass-production basis.

Partially complete, Caterpillar's new Technical Center provides an appropriate research atmosphere and ultra-modern facilities. Two of these buildings are devoted to prime power research.

Basic in-line Diesel and Natural Gas Engines are also machined and assembled in this modern Peoria, Illinois, plant, completed in 1948. Another large plant (San Leandro, Calif.) manufactures fuel injection components.

**FROM POWER CITY COMES MODERN DIESEL AND NATURAL GAS ENGINES PLUS DIESEL ELECTRIC SETS FOR EVERY POWER USE**

The present diesel and natural gas engine line, the facilities and the manpower are all dedicated to give you the best diesel engine value on the market today.

We offer this value in new engines and the constantly improved diesel industry standards such as the D397 and D342. This value results from assembly line, mass-production economies, precision manufacture, 100% inspection, excellent metallurgical quality, modern, compact design, more than thirty years of diesel experience and a constant intent to offer engines at an economical price per unit of horsepower.

Whatever your diesel or gas engine needs may be, you can expect Cat to offer the most for a reasonable price, low operating cost and a low final cost.

Specify Cat and be sure of satisfaction.

**CATERPILLAR**

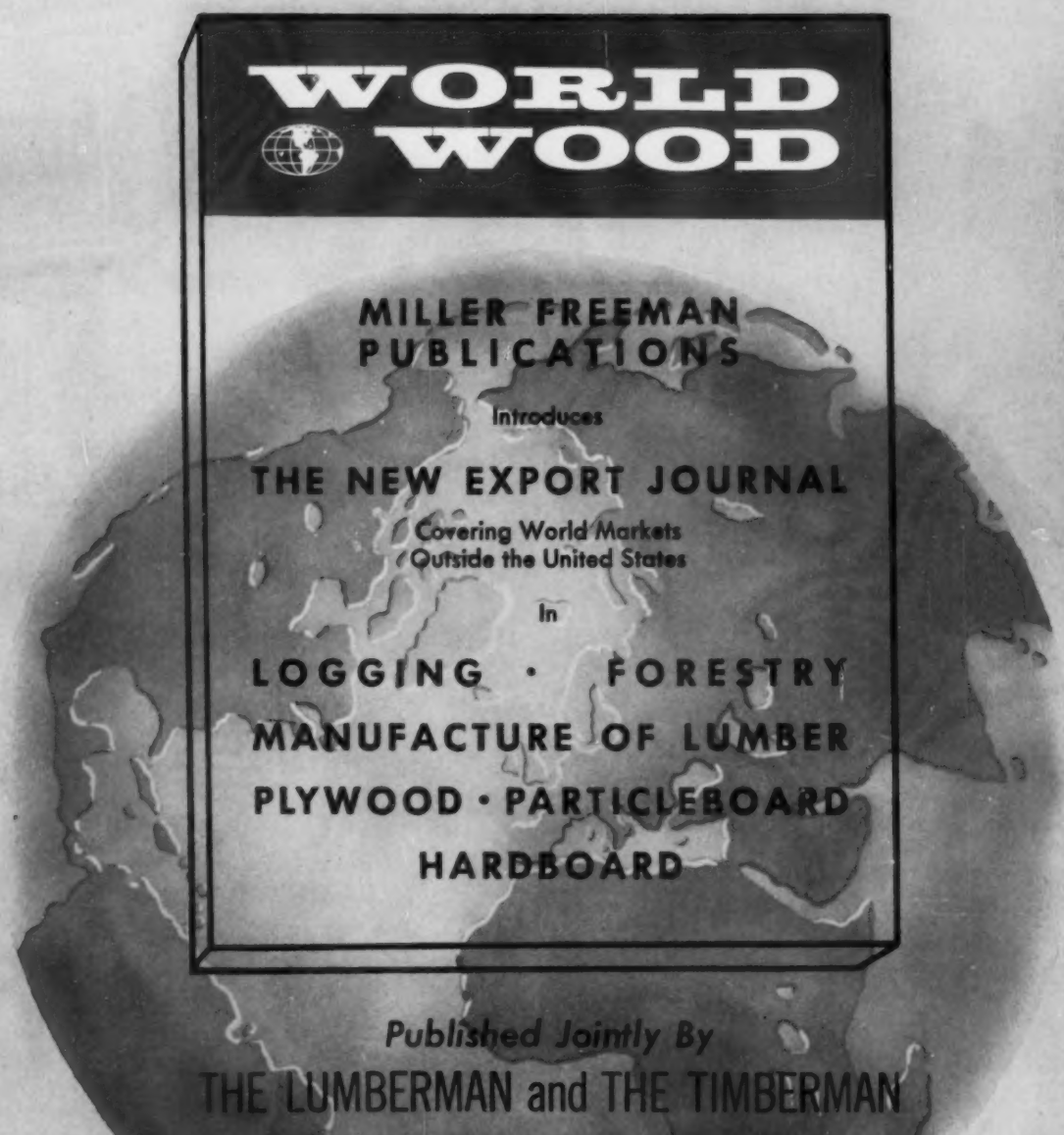
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Engine Division, Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

**engine power**
**BY CATERPILLAR**

Printed in U.S.A.

# 8000 readers in 100 countries!




*Published Jointly By*

THE LUMBERMAN and THE TIMBERMAN

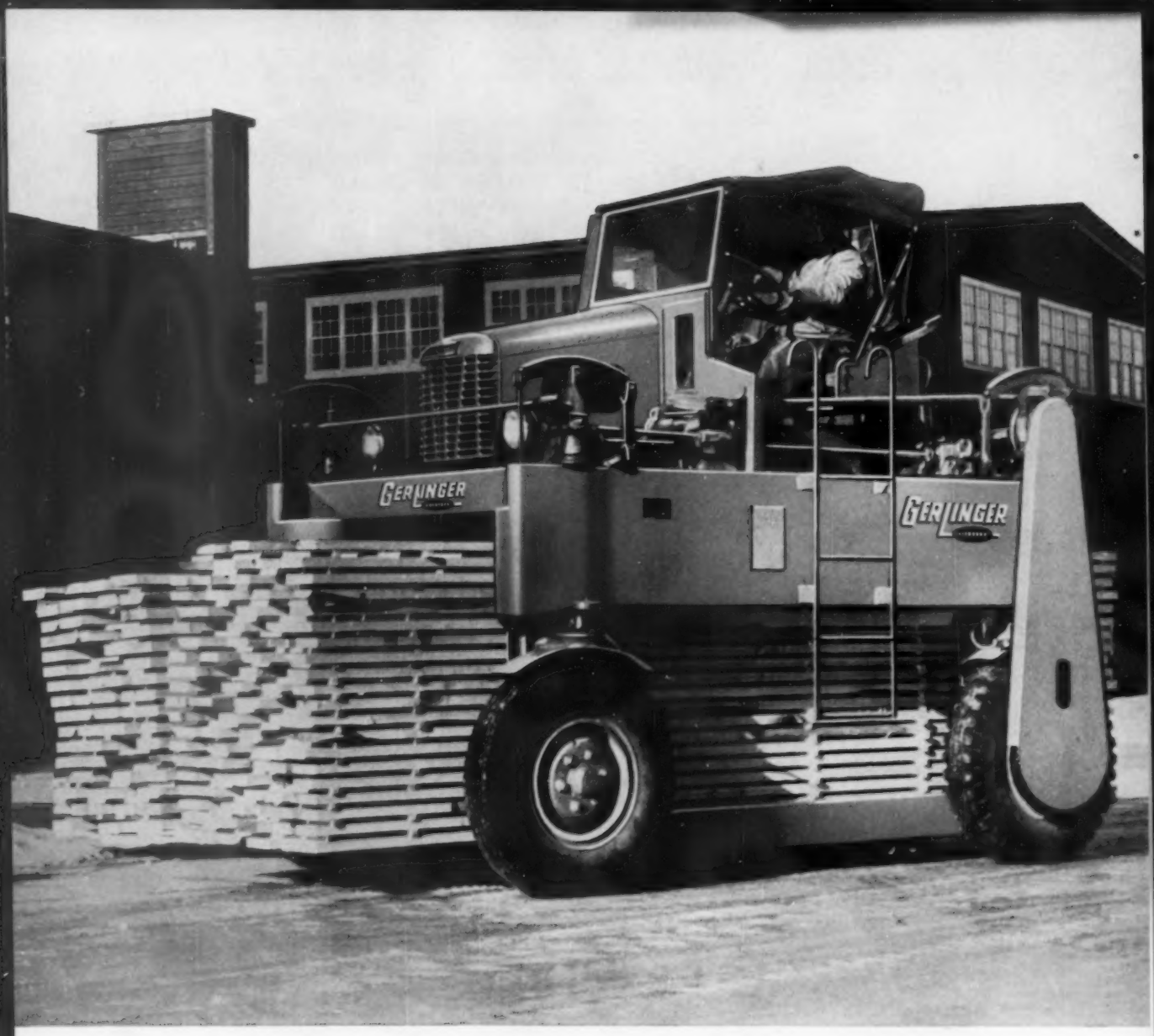
In announcing the new journal, WORLD WOOD, the need is recognized for an export magazine, circulating outside the United States, in all countries where the manufacture of forest products creates a market for machinery and supplies.

WORLD WOOD will be published August 25, 1960 (Advertising Closing Date: August 1), and its distribution will be among 8000 readers in more than 100 countries. Most of this distribution will be concentrated among some 6500 companies who comprise the world-wide export market outside the United States.

WORLD WOOD is a brand new publication and nothing like it has ever been available. It is made-to-measure for the United States manufacturer seeking to build or expand sales in the export field. The people reading WORLD WOOD will be those responsible for the raw material (logging and forestry), plus those responsible for the manufacture of lumber, plywood, particleboard, hardboard and other wood products. Manufacturers of machinery, equipment, services and supplies for these groups will find a ready and waiting market among the readers of WORLD WOOD.

The August issue is the inaugural issue and quarterly publication is planned for 1961. **For prompt servicing of your inquiries, phone the nearest Miller Freeman office . . . or write WORLD WOOD, 731 S.W. Oak Street, Portland 5, Oregon.**

# Reserve space now in this first issue!

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*. . . with extra profit per payload!* Gerlinger Material Carriers move massive loads *without lost motion* in yard, en route and at distant delivery points.

A "one-man crew" does everything. Loads in seconds. Hauls many tons at safe highway speeds. Delivers bulky lumber, millwork or pallets of building materials *direct to customer* miles away. No other equipment is needed.

See the cost-saving statistics reported by Gerlinger *Job-Proved* Carrier users. Ask for Certified Job Studies Nos. G-103 and G-104—and new Gerlinger Specification Folder *GMC*. Write Towmotor Corporation, Cleveland 10, Ohio or Gerlinger Carrier Company, Dallas, Oregon.*

**TOWMOTOR**
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**LEADERS FOR 40 YEARS IN BUILDING FORK LIFT TRUCKS, CARRIERS AND TRACTORS**

*Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation

*Cascades*

# LEBANITE HARDBOARD

... everything a hardboard should be!

*for:*

plastics lamination,
hardwood veneer core,
furniture backing and facing,
fixtures, displays, exhibits—
and hundreds of uses in
home, farm and industry.

UNIFORM . . . Lebanite's light blond color, texture and appearance *remain the same* from panel to panel.

HARD . . . The edges and surface of Lebanite are hard and clean—stay that way throughout sawing and milling operations. *No flaking or chipping.*

SMOOTH . . . *Both* sides of Lebanite are smooth—a two-way hardboard of maximum utility.

STRONG . . . Lebanite panels *can't* delaminate or blister because of the "broomed" fibers that go into its manufacture.

WORKABLE . . . Lebanite can be *Shaped, Routed, Edged, Punched, Scored, Drilled, Laminated, Faced, and sands cleanly.*

**LEBANITE PL 90.** Preferred by plastic laminators throughout the U.S., Lebanite Pl 90 is a *high* density dry-process board of exceptional internal bond strength. Available in 1/10, 1/8, 3/16, 1/4 and 3/8-inch thicknesses.

**LEBANITE L 30.** Superior *medium* density hardboard—ideal for punching and graining—responds well to machining. Available in same thicknesses as Lebanite PL 90.

**LEBANITE UL 50.** A *light* density board manufactured to close tolerances. Ideal for underlayment, backing and regular industrial uses. Available in 1/8, 3/16, 7/32 and 1/4-inch thicknesses.

Lebanite Hardboard
Lebanex Veneer Core Panels
Lebanite Perfo-Round
Lebanite Perfo-Square
Custom Manufacturing

LEBANITE UPS PRODUCTION BY
3 MILLION FEET PER MONTH!

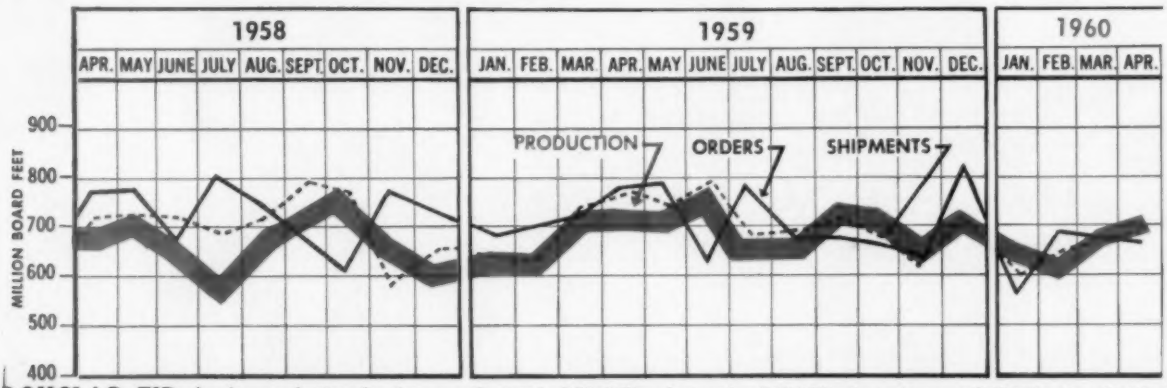
*To meet the demand, Cascade Plywood Corporation is boosting its output of high-quality Lebanite by 3 million feet per month, effective August 31!*

*Cascades Plywood Corporation*

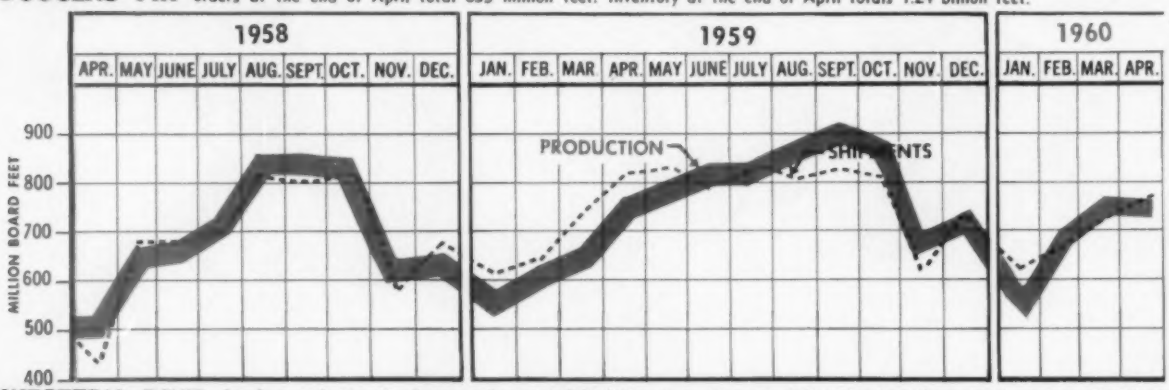
**LEBANITE DIVISION**

Public Service Building
Portland 4, Oregon

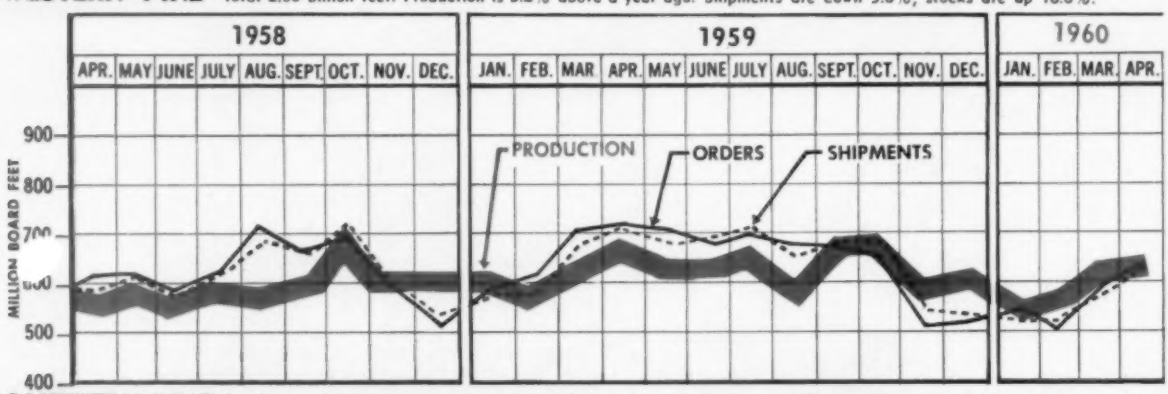
# INDUSTRY TRENDS



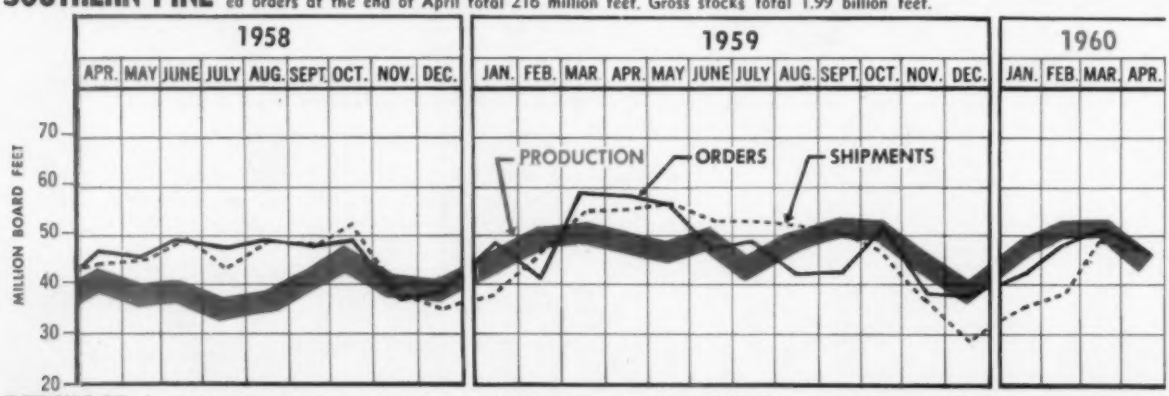

**DOUGLAS FIR** Lumber production for four months totals 2.91 billion feet, orders 2.61 billion feet, shipments 2.68 billion feet. Unfilled orders at the end of April total 633 million feet. Inventory at the end of April totals 1.24 billion feet.




**WESTERN PINE** Lumber production for four months totals 2.79 billion feet, shipments 2.77 billion feet. Gross stocks at the end of April total 2.08 billion feet. Production is 3.2% above a year ago. Shipments are down 5.8%, stocks are up 16.8%.




**SOUTHERN PINE** Lumber production for four months totals 2.29 billion feet, shipments 2.23 billion feet, orders 2.27 billion feet. Unfilled orders at the end of April total 216 million feet. Gross stocks total 1.99 billion feet.




**REDWOOD** Lumber production for three months totals 204.9 million feet, orders 186.3 million feet, shipments 169.7 million feet. Orders on hand at the end of April total 80 million feet. Stocks total 413.5 million feet.

PROOF THAT CHEVY'S BIG NEW CABS ARE BUILT FOR A BETTER DAY'S WORK!

# "THESE TRAILS WOULD SHAKE THE CAB OFF AN ORDINARY TRUCK...BUT NOT OUR CHEVY"

Few trucks are subjected to the body-wracking beatings that are part of a day's work for this Chevrolet Series 60 pulpwood hauler, owned by J. E. Fox, North Carolina logging contractor. As Bobby Fox, a partner in the business points out, "Loaded full-up with pulpwood, we drive right over stumps and potholes you'd think would tear the truck to pieces. These trails would shake the cab off an ordinary truck, but not our Chevy. Chevies are built to hold together longer."

■ No matter where you haul, you'll profit by the new toughness that's built into Chevrolet truck cabs for '60. You'll benefit from a cab that stands up to slam-bang runs over rough terrain, a cab that stays in A-1 shape years longer. Here are some of the ways in which Chevy assures this tight, maintenance-minimizing performance:

**1.** Tough new longitudinal sills reinforce the underbody; provide a solid foundation for cab sheet metal.

**2.** Extra-sturdy door openings—box-section pillars and sills assure lasting alignment. Doors stay weathertight with a minimum of maintenance.

**3.** New double-walled roof makes cab stronger and safer. Box-section pillars provide solid roof support.

There's a world of comfort for you, too. A wide seat, for instance, that softens the ride yet gives you extra support where it's needed. And there's more head room, hip room, shoulder room and leg room for rangy drivers.

First chance you get, visit your dealer and drive a new Chevy. Experience new Torsion-Spring Ride. Check up on Chevy's famous gas-saving 6's and V8's. Then you'll know, for sure, why you can expect thousands of extra miles out of a Chevy; why you can be sure of more work per day at least expense. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

## 1960 CHEVROLET STURDI-BILT TRUCKS

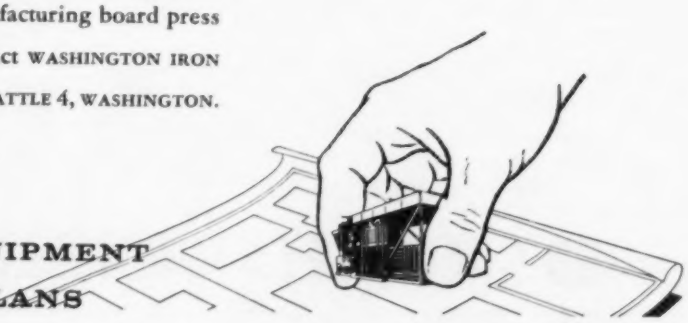
CHEVROLET

**REDWOOD** Lumber production for three months totals 204.9 million feet, orders 186.3 million feet, shipments 169.7 million feet. Orders on hand at the end of April total 80 million feet. Stocks total 413.5 million feet.

*Many different board products from 14 plants on 3 continents . . .*

## one thing in common – all use Washington presses

The raw material varies from soft wood and hardwood flakes, shavings, chips, particles and fibers to bagasse. Boards range in densities from 35 to 70 lbs. per cubic foot; in size from 4′ x 8′ to 5′ x 18′; in thickness from 1/12″ to 1½″. Some are homogeneous, some layered, some laminated. Presses vary from 10 opening to 30 opening, plant production from 20,000 to 500,000 feet per day. All the board plants listed above have one thing in common—they use economical, high-efficiency Washington multi-platen hot presses. Our experience in design engineering and manufacturing board press equipment is at your disposal—contact WASHINGTON IRON WORKS, 1500 SIXTH AVENUE SOUTH, SEATTLE 4, WASHINGTON.



**WASHINGTON PRESS EQUIPMENT HAS A PLACE IN YOUR PLANS**

# MODERN WESTINGHOUSE ELECTRICAL SYSTEMS KEEP LUMBER ON THE MOVE!

WESTINGHOUSE PROGRESSIVE AUTOMATION CAN HELP YOU BUILD A COORDINATED SYSTEM TO STEP UP PRODUCTIVITY, PROFITS

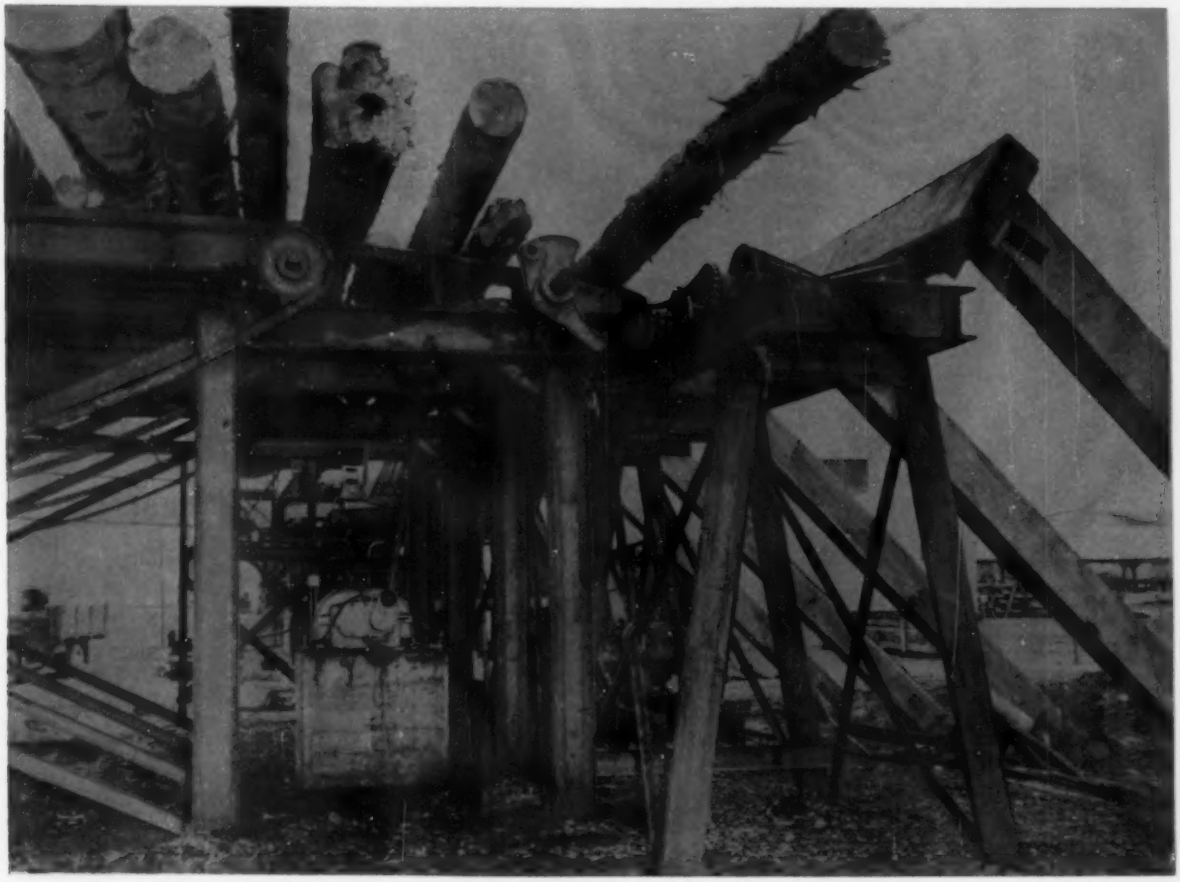
Your production planning may call for new facilities or for modernization of existing mills. Productivity and profits, in either event, depend upon two things . . . minimizing downtime, and producing lumber at lowest possible cost-per-thousand board feet. How well you reach these goals depends heavily on more automatic production.

Westinghouse is ready now to help you plan economical steps to achieve the objective of more automated production. Westinghouse *Progressive Automation* is the method . . . a practical, step-by-step method which starts with the modern Westinghouse controls, motors and drives at work in lumber mills today.

Through this plan, you add other coordinating controls which are compatible with those previously installed. In this way you are building a coordinated system—always ready for the next step, but always realizing today's production goals. Westinghouse, your one source for all electrical equipment and gearing, is ready to work with you on this plan. Let us know your objectives. Call your Westinghouse representative for details on how we can help you.

J-96148-1

YOU CAN BE SURE...IF IT'S Westinghouse

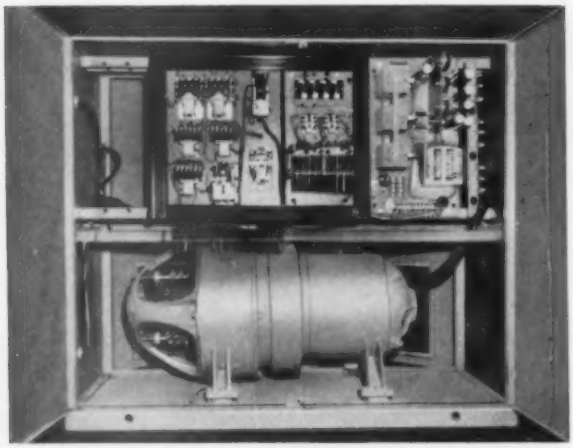


# RELIABLE, MAINTENANCE-FREE WESTINGHOUSE CONTROLS

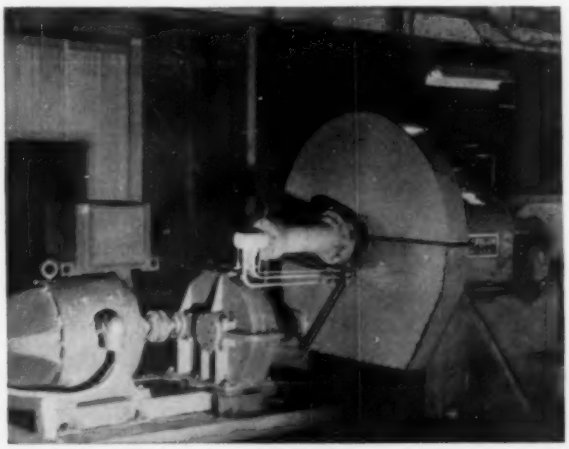
Forward-looking lumber mills are today making important cost savings with automatic control systems. These systems help use man power efficiently . . . reduce manual operations; provide more time to select and grade lumber.

MAGAMP DRIVE CONTROLS—are a step forward in the use of adjustable-voltage d-c drives to obtain regulated drive speeds for machines and processes. Static-design Magamp has no moving parts nor electronic tubes requiring periodic replacement . . . thus offers the ultimate in reliability.

PLANER-FEED
Magamp controls the combined planer-feed feed-table drive, a 40-hp, adjustable-voltage d-c drive which delivers a high production rate over a wide speed range, independent of loading.



VENEER LATHE—A Westinghouse 75/100-hp d-c motor drives veneer lathe through a single reduction gear unit with Magamp control. Five years' experience emphasizes simplicity of controls, ease of operation and negligible maintenance. Automatically controlled constant veneer sheet speed is available over a wide range.



LOG CARRIAGE
Magamp regulation of four log carriage drives at Kirby Lumber Corporation assures smooth, fast operation and results in maximum production with exceedingly low maintenance and operating costs. Original production estimates were exceeded by 15%.

DYNAC® ELECTRIC BRAKING—brings squirrel-cage and wound rotor motors to a stop smoothly and rapidly by applying d-c current to the stator winding. The 7-foot headrig at Plum Creek Logging Company, driven by a 200-hp wound rotor motor, is stopped in 23 seconds by DynAC . . . faster if desired. DynAC affords such advantages as adjustable braking torque up to 8 times rated torque, very smooth stop and no reversals.

J-96148-2

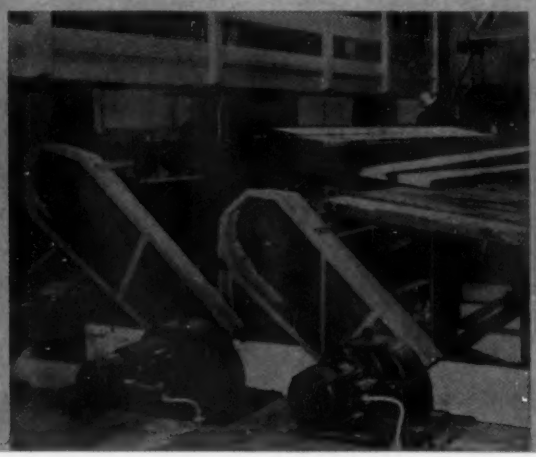
# ...SURE STEPS TO MORE EFFECTIVE AUTOMATION!

WESTINGHOUSE CONTROL BOARD—controls many log operations. This control lets the operator handle many operations such as log haul, cutoff saw, log stops and log decks from one point.

MODERN MERCURY VAPOR LIGHTING—brought savings of $6000 per year in lighting and maintenance costs. Mercury vapor lights at ceiling height with extra light provide an abundance of light around machines.

ROUND-THE-CLOCK reliability—from Westinghouse gearmotors which drive chains ahead of resaw. Inspection of these units is easy. New Westinghouse Moduline* design offers modular construction for changeovers and versatility. Motocylinders, for a push, thrust or turning motion, are used on sweeps, jump chains, gates, log dogs, lumber stops, arms and kickers.

*Trade-Mark



## J. NEILS LUMBER CO. SLASHES DOWNTIME...LOWERS PRODUCTION COSTS

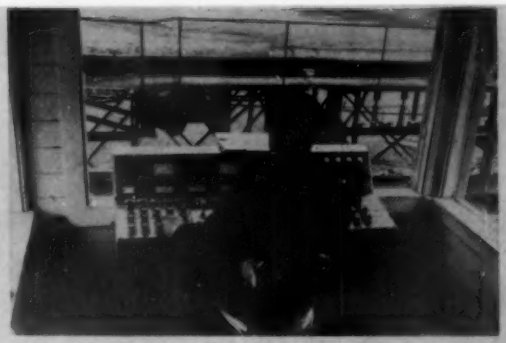
Design, construction and operation of this sawmill are all aimed at minimizing maintenance and repairs. J. Neils provided physical layout and machinery to allow maximum recovery of higher grades of lumber; also kept operation costs and maintenance of the mill at a bare minimum.

J-96148-3

YOU CAN BE SURE...IF IT'S Westinghouse

## MODERN WESTINGHOUSE ELECTRICAL SYSTEMS

RUGGED LIFE-LINE® "A" MOTORS—drive log conveyor chain and cutoff saw. Here is the grueling service the famed Life-Line "A" thrives on. Extra-high capacity for changing and unusual load demands, high starting torque, and a rugged, balanced design overall assure continuously high performance. New fortified insulation gives protection against moisture and contamination.



WESTINGHOUSE CONTROLS—on barker operator's control station make best use of man power . . . one man runs the entire operation. Station is separate from barker and elevated to give unobstructed view of barker and all chains carrying logs.

WESTINGHOUSE MOTOCYLINDER—eliminates costly expense of maintaining steam and air cylinders. Motocylinder produces a smooth, controlled push, requires only one power cable, and is easy to install. Totally enclosed design gives protection against wet atmospheres. Equipment is employed here with a deck stop loader.

WESTINGHOUSE MOTOR—an 85-hp Life-Line "A" induction motor directly drives a 43-inch ring-type mechanical barker.

## AT PLUM CREEK LUMBER COMPANY'S NEW PABLO MILL...

Modern operations facilitate lumber handling. Westinghouse band mill and resaw motors, control centers, large motor control, panelboard, switchboards, planer drive and lighting make possible high operating efficiency.

J-96148-4

YOU CAN BE SURE...IF IT'S Westinghouse

TUNE IN WESTINGHOUSE CBS TV-RADIO COVERAGE, PRESIDENTIAL CONVENTIONS, JULY 10-29

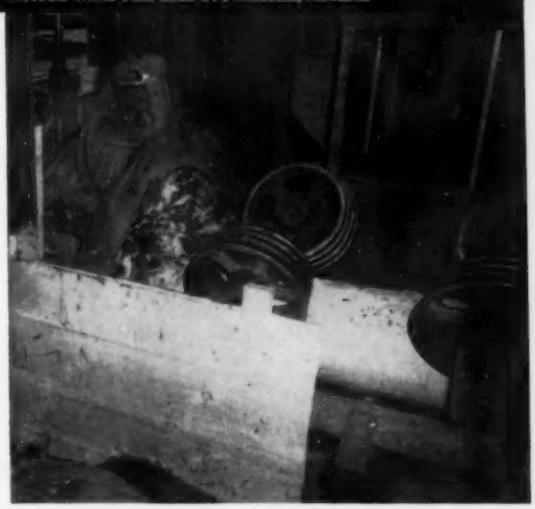
H. G. Anderson
Plant Engineer



Red Le Deau
Mill & Yard Supervisor

# New NICHOLSON BARKER installation increases production, utilization for Missoula White Pine Sash Company.

Missoula White Pine Sash Co., Missoula, Montana



## *"50M board feet in less than two hours..."*

Let the supervisors of Missoula White Pine Sash Co. tell you in their own words how they feel about their new NICHOLSON BARKER–

"Without a doubt our Nicholson layout has resulted in more production/per man/ per day ... in fact we're putting over 50,000 feet through the barker in less than two hours."

"We're now saving over 40% of former saw maintenance costs and really appreciate the clean operation that the NICHOLSON gives us. On top of that, the Nicholson Barker assures us of a plus profit on chips."

"The NICHOLSON machine is amazing– we've tested our most knotty and twisted logs on it and we're very pleased with clean and fast debarking."

NICHOLSON DEBARKERS– recognized the world over for ruggedness, simplicity of operation and outstanding productive capacity. Full range of sizes. *SEND FOR BULLETIN 6016.

*for the best in Log Barkers*

**NICHOLSON MANUFACTURING COMPANY**

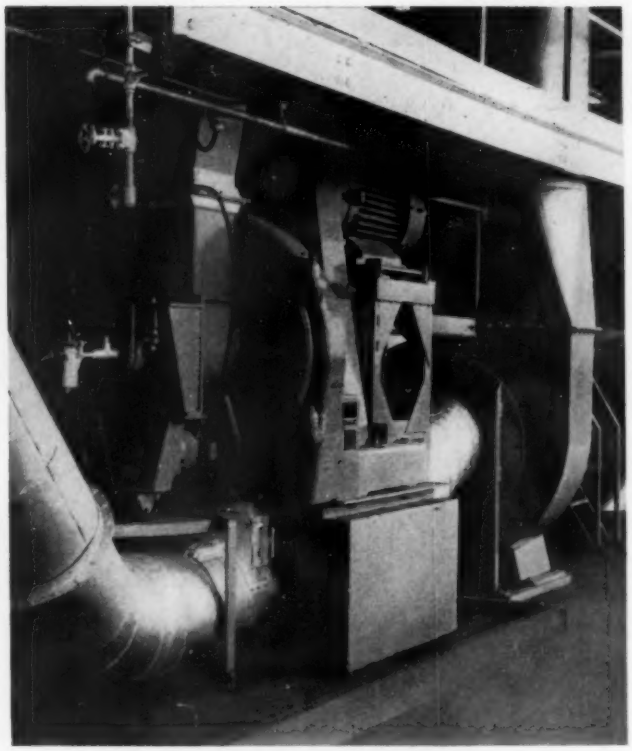
***Designers and Builders of Special Machinery and Plants***

**2525 "A" Street S. E., Auburn, Wash. • TEmple 3-4800**

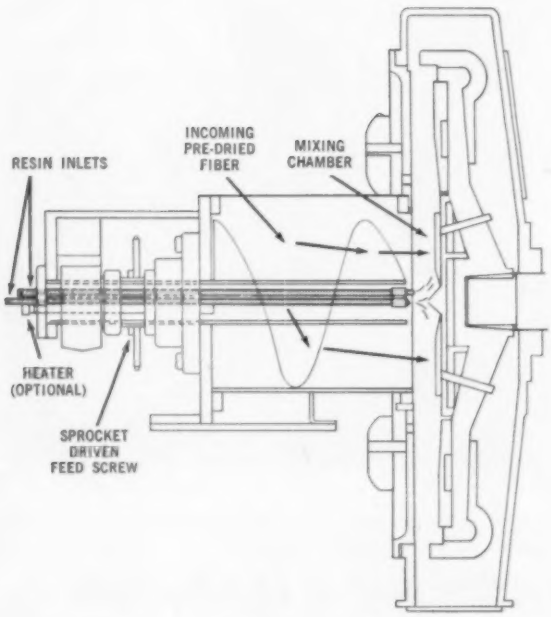
*In Canada:* Nicholson Murdie Machines, Ltd., Victoria, B.C.

# New Bauer Equipment Application for Hardboard and Particle Board Plants

- *Improves dispersion of all additives*
- *Greatly reduces downtime for clean-up*
- *For dry and semi-dry operations, including new Emerite process*



Bauer No. 245 Single Revolving Disc Attrition Mill with special K 1909 screw feeder, at Kroehler Manufacturing Co., Meridian, Mississippi.




The Bauer single revolving disc attrition mill above has a specially designed screw feeder with a hollow shaft. Multiple liquid additives, such as Emerite or other processing materials, are introduced through the shaft into the central mixing chamber. Here, where the most efficient mixing action takes place, additives are thoroughly dispersed through the wood fibers.

This new method of dispersion assures highest uniformity and a better quality end product. Since the machine seldom needs cleaning, production is often improved because downtime is tremendously reduced. Whether you're planning a new installation or operating with an old system, it will pay you to investigate the economies of this new Bauer development.

*Other Bauer equipment: Crushers, Digesters, Pressafiners, Hammer Mills, Single and Double Disc Attrition Mills and Fiber Refiners, Pump-Through Refiners, Specific Gravity Separators and Laboratory Size Grinders.*

## THE BAUER BROS. CO.

**1848 Sheridan Avenue · Springfield, Ohio**

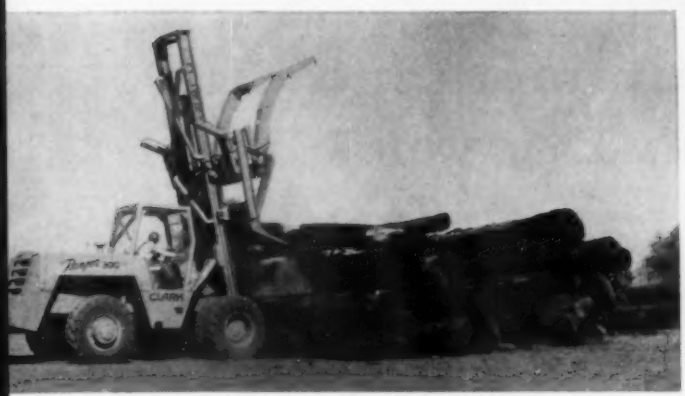
# *CLARK EQUIPMENT moves mountains . . .*

## *of lumber*

**in 18,000 lb. packages. The CY-180 shown is just one of the family of Clark pneumatic tired trucks available in capacities from 2,000 to 70,000 lbs.**

## *. . . sheet plywood*

**Here's unmatched speed and efficiency for inside operations. This 4,000 lb. capacity Clarklift® is just one of a full line of solid tire trucks ranging in capacities from 1,000 to 10,000 lbs.**



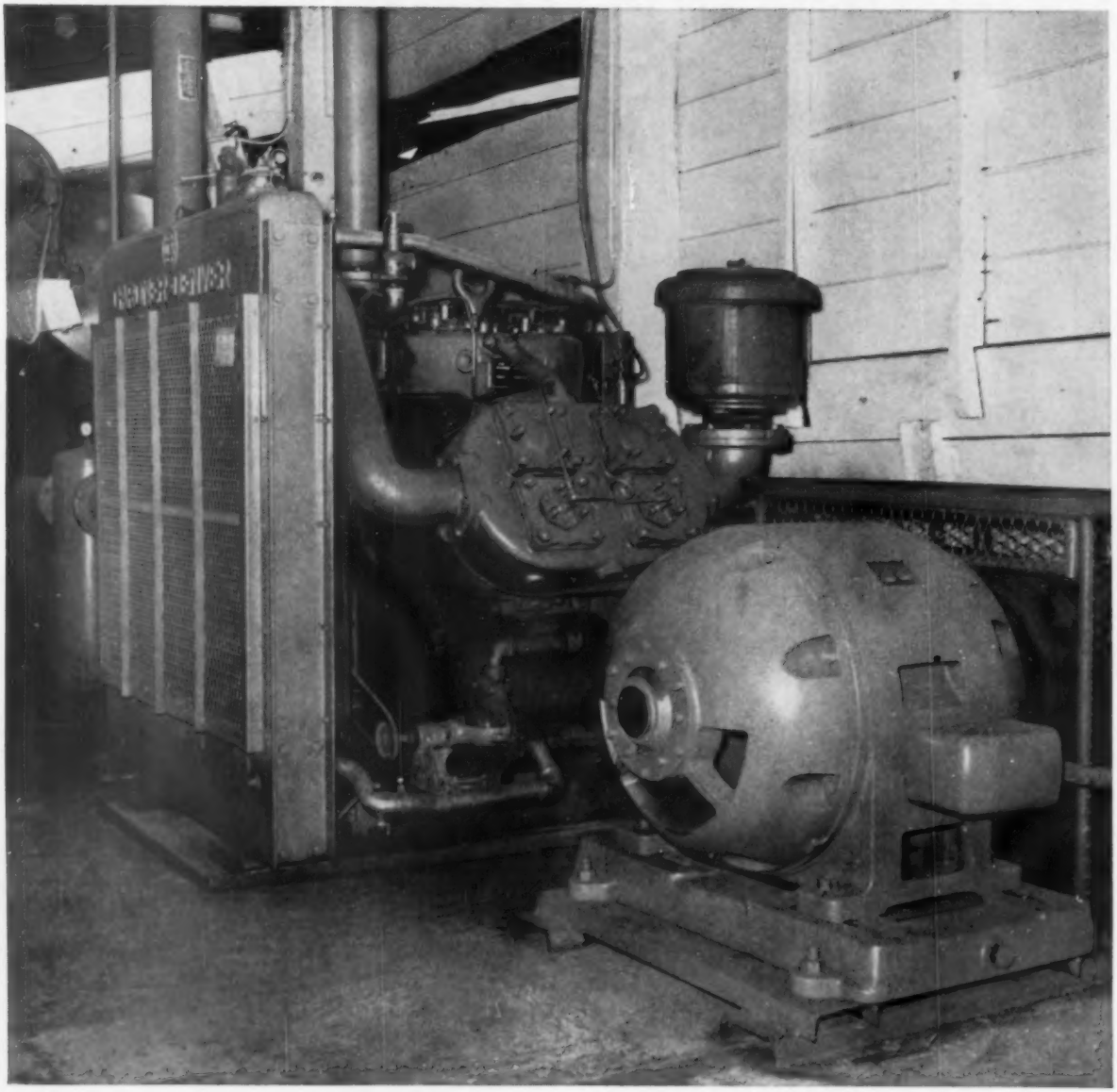
## *. . . or heavy logs*

**Utilizing a Log Grab attachment, this 30,000 lb. capacity *Ranger*® is part of a full line of special rough terrain trucks developed for the lumber industry.**

*For specifications on any of this equipment, contact your local Clark dealer, or write:*

CLARK® EQUIPMENT

Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek 156, Michigan



# Keep mill air equipment moving with a Gardner-Denver WB

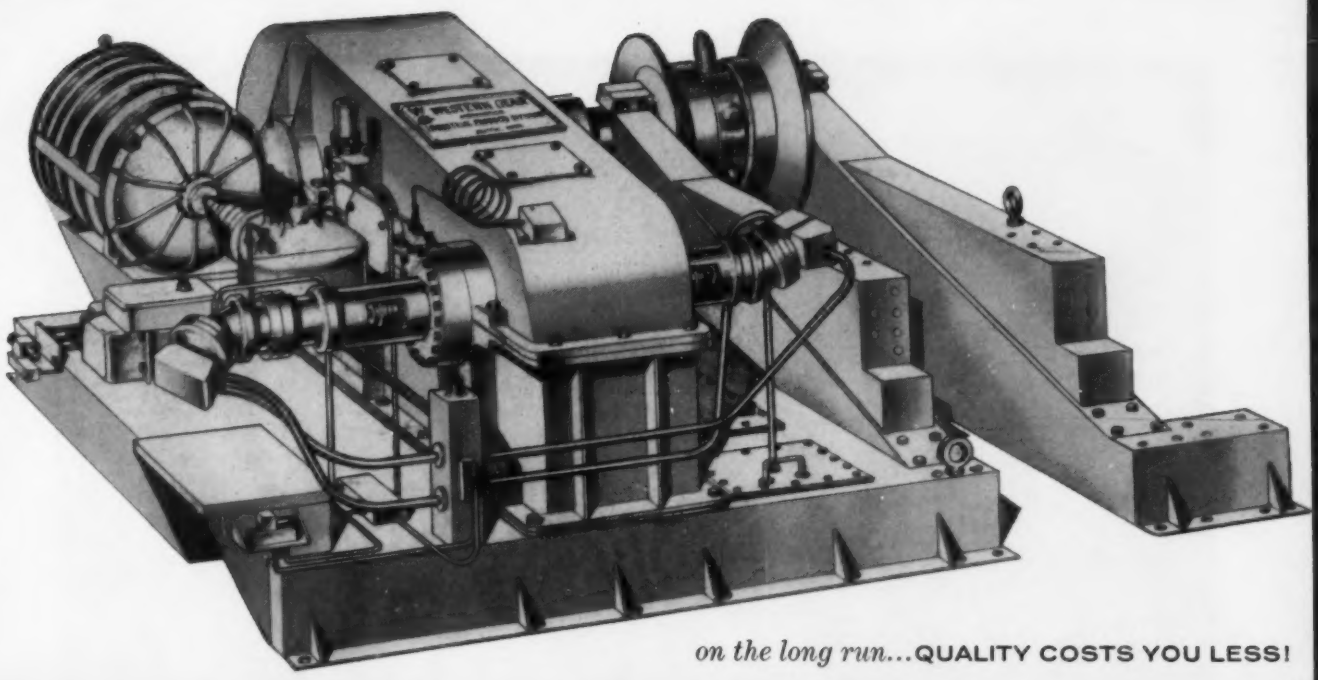
This water-cooled work horse is a Gardner-Denver WB. It's known in many a mill for its smooth performance and low-cost operation. The WB's cooling system is partly responsible for much of its popularity. The combination radiator-intercooler provides a self-contained cooling system . . . saves cooling water. Water-jacketed heads and cylinders assure lowest discharge temperatures and better lubrication. Get in touch with your Gardner-Denver compressor specialist or write for bulletin WB-10.

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario
Branch Offices: Seattle, Vancouver, San Francisco, Los Angeles, Salt Lake City, Denver, and Wallace, Idaho

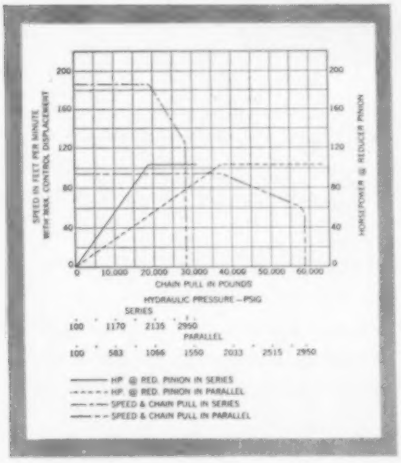
the lumber industry.



*on the long run...* **QUALITY COSTS YOU LESS!**

# ANOTHER **WESTERN GEAR** "FIRST"...ELECTRO-HYDRAULIC LOG HAUL DEVELOPED FOR ALASKA LUMBER & PULP COMPANY

**The electro-hydraulic log haul pictured here, unique among the 175 gear drives supplied for the new mill embodies a new concept developed by Western Gear engi-**




**Operational requirements were:**
48 ft. of rise in 220 ft. of haul; maximum chain pull not less than 50,000 lbs. nor more than 65,000 lbs; haul 200 ft. of 24" diameter logs at 120 ft. per minute.

Extra measures of quality that made this design the most practical and economical choice over all other log haul drives are:

**1. Infinite speed variation** from 0-185 FPM permits continuous maximum mill flow regardless of variable debarking time.

**2. Horsepower Limiter Control** automatically adjusts for maximum preset horsepower to allow full capacity operation regardless of load.

**3. Absence of shock loads.** Electric motor runs continuously, softer starting of hydraulic drives eliminate major service problem.

**4. Positive Overload Protection.** High response relief valve removes pressure to motor, instantly sets fail-safe hydraulic brake.

**5. Unitized Construction** integrates base, valve components and piping into protected self-contained package, completely tested at factory.

The considerable knowledge of marine electro hydraulic deck machinery combined with their background in power transmission equipment and log haul was invaluable in the Western Gear development of this important new concept of log haul design.

Western Gear's experience in electro-hydraulics and infinitely variable speed power transmissions can solve your drive problems. For full information, write, wire or phone:

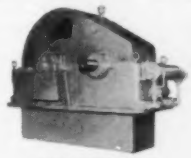
**INDUSTRIAL PRODUCTS DIVISION**
P. O. Box 126, Belmont, California
Phone: LYtell 3-7611

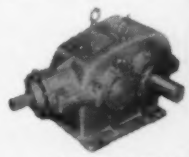
WG INDUSTRIAL PRODUCTS DIVISION

INTEGRAL GEARMOTOR

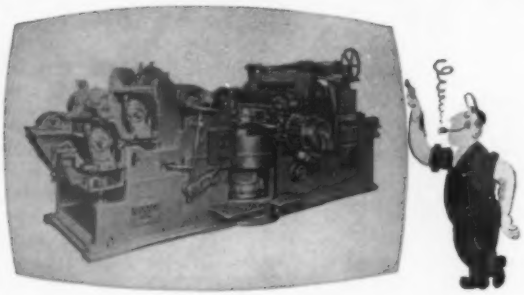
PARALLEL SHAFT REDUCER

VERTICAL SHAFT REDUCER


HIGH SPEED UNIT


RIGHT ANGLE REDUCER

®



The S. A. Woods Machine Co., Boston, Mass., have a world wide reputation for building outstanding precision woodworking machines. Knives made by the Ohio Knife Co., installed on these machines, were selected because they are specially made to deliver exceptionally long runs without the necessity of re-grinding. Actual customer records show they consistently last 20% to 30% longer than competitive knives in the same service.

**OK NO. 4** is a special type of high speed steel designed to withstand the heat of fast heavy feeds on rough, knotty and sandy lumber and still hold a keen edge on long runs.

**OK NO. 6** is made of specially developed chrome steel for mills working in soft, green wood.

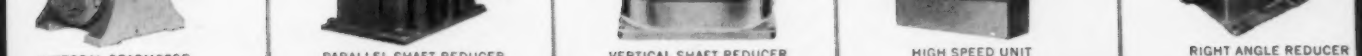
Next time order OK Planer Knives, and enjoy their superb performance, resulting in higher production at a lower cost. For complete information write Dept. **11-R**

*Manufacturers of Hog Knives, Veneer Knives, Chipper Knives, Planer Knives.*

GO WITH OHIO GREEN

**THE OHIO KNIFE CO.**

CINCINNATI 23, OHIO




# State of the BOARD Industries

The board industries have taken more pronounced positions this past year. They seem to be falling into more recognizable patterns. This is particularly true of particleboards with the targeting of markets and increasing tailored uses.

Both market and competitive factors are becoming better defined. Roadblocks can be recognized and manufacturers may see the action necessary—which road they must travel.

Coming on the scene for sometime, but now causing an almost over-night change in marketing direction, is the recognizable industrializing of the construction industry with their more audible demands for components rather than pieces—a market well suited for panelized products. At the same time insulation boards are moving from sheathing and ceiling applications to roof decking, panel cores and high density exteriors.

Gaining strength is factory prefinishing which ties in logically with holding down in-place costs of homes. Wood graining has been improved to the point where it is highly satisfactory for both particleboards and hardboards—difficult to detect from real wood.

Growth pattern for all boards remains on a steady incline and will probably continue upward for the next several years. Six new particleboard plants came into production in U. S. in 1960 and two more are already scheduled for 1961. Two Canadian plants came into production in 1959 and two more will be operating in 1960. By year's end there will be 56 U. S. plants (including captive plants) and 4 Canadian units producing.

An estimated 150 particleboard plants will be in full swing during the next five years.

The hardboard industry had 14 plants producing in 1959 and will have 16 plants operating this year. The next five years will see double this number.

There were 23 insulation board plants in operation in 1959 and expected are at least 5 more within 5 years.

All three board industries are stepping up their product and market research and we can expect many new and improved products to reach the market every year. Extent of their growth will depend upon the amount of product and market development efforts expended.

Greatest problem is with imports. Direction is toward specialty products—new faces—prefinishing—packaging.

| Year | PARTICLEBOARD (¾" Basis) Production—50 Plants | HARDBOARD (⅛" Basis) Production—14 Plants | INSULATIONBOARD (½" Basis) Production—23 Plants |
|---|---|---|---|
| 1958 | 126 Million sq. ft. | 1.6 Billion sq. ft. | 2.789 Billion sq. ft. |
| 1959 | 250 " " " | 2.1 " " " | 2.876 " " " |
| Capacity | 426 " " " | 2.8 " " " | |
| | 30 Million sq. ft. produced by plants using 100% of output. • 56 Million sq. ft. into cut-to-size by independent plants. | One plant used 100% of own production. • Four plants cut-to-size entire output. | |

| Product Types | No. Plants Producing | Product Types | No. Plants Producing | Product Types | No. Plants Producing |
|---|---|---|---|---|---|
| Core | 23 | Tempered | 10 | Pre-coating | 7 |
| Furniture | 16 | Striated | 10 | T&G | 7 |
| Underlayment | 15 | Industrial | 9 | Interior Finish | 5 |
| Cut-to-Size | 14 | Furniture | 7 | Structural | 5 |
| Veneer Overlay | 6 | Prefinished | 6 | Roof Insul. | 5 |
| Cabinet | 5 | Underlayment | 5 | Decorative | 4 |
| Prefinish-Prefill | 5 | Overlayment | 5 | Ceiling Tile | 3 |
| Floor tile—plank | 3 | Decorative | 4 | Tempered | 1 |
| Construction | 3 | T&G | 3 | | |
| Sheathing | 2 | Siding | 3 | | |
| Decking | 1 | Etched | 3 | | |

# Hardboard Output Tops 2 Billion

## face problems of competing with other products and of imported panels seeking the same markets, which

By F. M. HUGHES, President,
American Hardboard Association

Like a cross-country runner, the hardboard industry has come a long way in a short time. It has passed the most significant milestone in its history with domestic production now at a new all-time record rate of more than two billion square feet. Estimates for double this volume, originally set for 1975, have been recently brought five years closer and should be realized within this decade.

But while we know where we are headed, the path ahead for hardboard is beginning to show signs of twists and turns, causing us to measure our steps more carefully.

**Home grown problems.** Some issues confronting the industry today are the natural result of expanding production and the burgeoning market which we ourselves are creating. To efficiently service and supply this market, our industry must adopt increasingly complex and specialized methods. Intense competition is putting a tighter strain on every manufacturer's activity, from new product research to the field sales force.

Other challenges, such as the foreign import problem and the corresponding decline of U. S. hardboard exports, are not of our own making. Nonetheless, they must be faced squarely along with the more heartening forecasts for the future.

A look back will show that the hardboard industry has traveled far since its beginning in 1926. Once strictly a utilitarian material, hardboard is now used in industry and the home in literally thousands of ways. With the introduction of new wood-grained, textured and other specialty boards, hardboard is building a new image as a quality material with an almost unlimited potential.

Spurred by this array of new board products, most unheard of a few years or even months ago, manufacturers are stepping up their marketing, sales and service activities to keep pace with demand.

**How has this increasing business volume affected the industry?** The first lesson learned is familiar to many other mass-marketing industries: greater unit volume doesn't necessarily mean more profit per unit. Secondly, an expanding market means more intense competition in every phase of business. Third, more money must be spent by a manufacturer to maintain his competitive position. All these factors may be grouped together under the need for greater expenditures.

Production facilities, for example, must be completely modern and geared to maximum efficiency. For an average size new plant designed to produce 100 million square feet annually, a capital investment of $5 to $7 million may be required. In addition, the list of plant equipment and machines is a lengthy and costly one.

To provide such a plant with a steady source of raw material, another major investment of from $15 to $20 million may be required for a timber reserve, providing, of course, an adequate timber stand is available and costs of transporting logs to the plant are not prohibitive. Labor, transportation, disposal of waste materials and other factors add to the mounting costs of new facilities.

Apart from the major investment required for manufacturing plants and related equipment and services, operating costs in all phases of the industry are on the upturn.

**Costs of sales and distribution** now account for between 10 and 25% of the unit price on most hardboard products, a ratio which has climbed considerably in recent years. Advertising and promotion is becoming increasingly important, as is personalized pre-sale and post-sale customer services. Manufacturers today must be prepared to do much more than merely make hardboard and offer it to the buyer.

The same competitive pressures are demanding a greater attention to market and product research. The search for new and better products with greater user appeal will sharpen in the years ahead, following the successful pattern set by the newer prefinished wood-grained panels. This emphasis is a necessity.

One manufacturer, for example, reports an investment of $600,000 annually in pure product research; an expenditure which may or may not be justified by results but which is nevertheless made necessary by the pressures of competition. Similar demands must be met in all reaches of marketing and customer services.

To keep in pace with our expanding economy, the hardboard industry must continue to work closely with the great commercial users of our products. The mammoth $16 billion home construction field, especially, represents a potential for a vast increase in the use of hardboard. The needs of home builders, furniture makers and other commercial users

**Hardboard production and consumption** is at a record high. Production, on a ⅛-inch basis, totaled 2.4 billion square feet in 1959. Recent domestic production history, record of foreign imports and total consumption (production plus imports minus exports) is as follows:

| Year | U. S. Production | Imports | Total U. S. Consumption |
|---|---|---|---|
| 1959 | 2,154,666,666 | 281,571,522 | 2,420,952,370 |
| 1958 | 1,640,000,000 | 153,007,809 | 1,776,590,631 |
| 1957 | 1,516,058,660 | 161,940,008 | 1,660,181,398 |
| 1956 | 1,439,949,330 | 149,923,040 | 1,571,912,425 |
| 1955 | 1,412,154,660 | 105,815,076 | 1,501,070,815 |
| 1950 | 950,899,000 | 14,750,000 | 945,469,000 |

# Feet Producers now with an increasing amount sell for less.

must not only be met, but special materials must be perfected exactly suited to their demands.

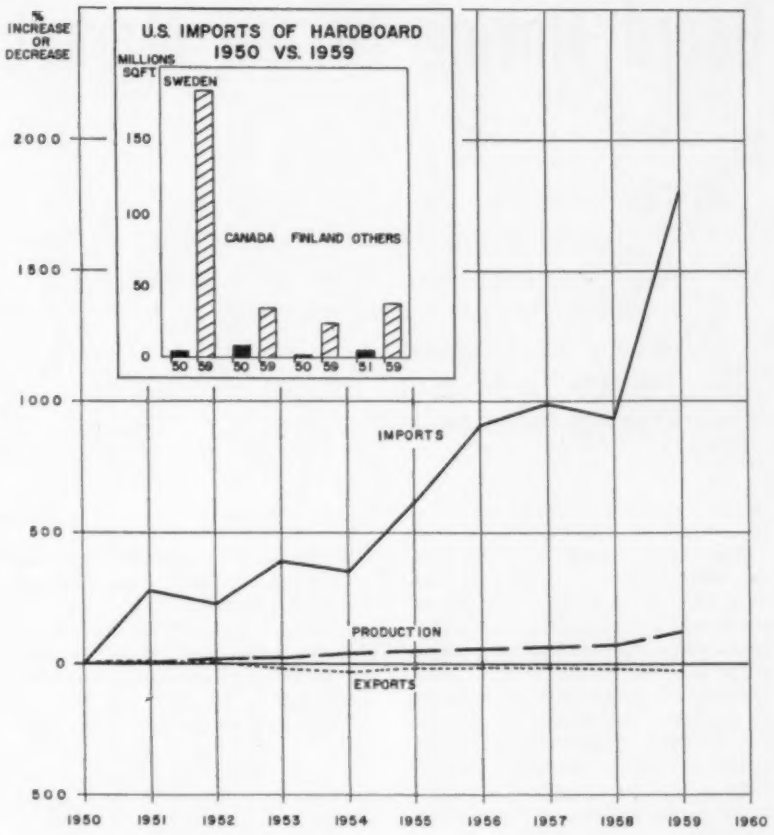
**Problems from abroad.** Complicating this picture, the specter of greater competition from abroad is looming larger on the industry's horizon. In company with other wood products, hardboard is confronted with growing inroads by foreign imports into the U. S. market and a corresponding drop in our own exports.

At the close of World War II, the U. S. produced 75% of the world's hardboard and enjoyed a favorable balance of trade. Today, we produce less than half of the world's supply despite our expended domestic industry. With the help of low wage rates and favorable tariffs, some 15 nations led by Sweden last year exported some 281.5 million square feet to the U. S. Imports have grown by almost 2000% since 1950 and have captured 11.6% of the American market. Hardboard exports from the U. S. have fallen to a negligible amount, only 15.2 million feet last year, according to Department of Commerce statistics.

**Expanded hardboard market** in this nation is entirely the creation of domestic industry. American companies have poured vast expenditures into building a healthy and vital industry and have taken measures to create and protect markets. By contrast, foreign suppliers have exploited opportunities already created for them. They have gained a market on the basis of price alone, ignoring market development through research and promotion and without attention to matters of consumer service and education.

While foreign hardboard was first encountered within a few hundred miles of principal seacoast ports, imports are now to be found in virtually all areas of the country. With the opening of the St. Lawrence Seaway and Great Lakes ports to ocean shipping, we can expect an increased flow of foreign board into the midwest. Some of these products are offered for sale here at 25 to 40% below the resale prices of most domestic hardboard.

**TRENDS IN U.S. HARDBOARD IMPORTS, EXPORTS AND PRODUCTION 1950 – 1959**




First seen as standard S1S panels, imported boards in striated and perforated form are now being offered. Indications point to foreign manufacturers entering the thriving specialty board market as soon as their capability permits.

**In the decade ahead** we can look forward to:

- Domestic hardboard production will expand to four billion square feet by 1970.
- Imports, especially from the Scandinavian countries, will continue to increase. They conceivably could capture 35% of the domestic market by 1970.
- Greater competition will demand increased emphasis on development of new products, new applications and new markets.
- The import price threat must be combated by more pre-sale and post-sale consumer services and assistance, as well as by product quality.
- Promotional efforts by individual manufacturers and by the industry will assume larger proportions. The Hardboard Association, for example, has just announced plans for a large-scale trade advertising program to alert quantity buyers to the advantages of domestic hardboard.

Although many of the challenges facing us today are pressing, the general outlook for the future is promising. We are entering an era of change, with economists predicting increased productivity and purchasing power as well as expanding markets. Hardboard has an unprecedented opportunity in the years ahead to solidify and expand its position. The surface of its potential has barely been explored. ■■

# "Hard Sell" Keeps Insulation Board Moving to the Market

The "Package Salesman Program" discussed at right boosts sales at retail lumber yards. New and better products which speed erection and reduce labor costs are claiming new markets in housing. Increasing imports loom as a threat.

The midway point in 1960 finds the insulation board industry making solid progress in plant capacity, sales and sales promotion, product development and the upgrading of existing products.

Three additional insulation board plants have been opened since 1956 and the total number of producing insulation board plants in the 50 states is 23. Construction of one additional insulation board plant is being considered.

Insulation board products sales fortunes are closely tied to the fortunes of the construction industry—particularly home building.

**By CHARLES M. GRAY,**
**Manager,**
**Insulation Board Institute,**
**Chicago, Ill.**

With the substantially increased production capacity, the industry found that because of the softening in home starts during the early months of this year, sales efforts had to be greatly intensified. While the long-range (5 to 10 years) forecasts for construction are good, the strong belief is that the increased outlays for sales promotion, advertising and salesmanship must be maintained, particularly in view of the industry's increased production capacity in recent years.

Federal census statistics show that 1955's high output of 2.990 billion square feet of insulation board (½ inch basis) fell to 2.687 billion square feet in 1957. Output in 1958 amounted to 2.789 billion square feet and 1959's output totaled 2.876 billion square feet (preliminary estimate).

During an informal poll of the 14 IBI member companies at a meeting in October, 1959, the general consensus was that sales might be 8% to 10% better in 1960. Some concern was expressed at that time about the effect of tight money on housing. During a similar poll of the members in February, 1960, the consensus was not as optimistic. While the members felt that 1960 would be a "good" year, they agreed that any improvement over 1959 in 1960 would be the result of "hard sales efforts."

**A bright spot** in the picture for insulation board products is the steadily increasing sales of insulation board acoustical ceiling tile through retail lumber yards. It's estimated that about 60% of all fiberboard acoustical tile sold by retail building materials establishments goes to home owners and builders.

The industry's acoustical tile sales to dealers were 23.2% greater in 1959 than in 1958. This sales increase tops off a string of five record-breaking sales years for insulation board acoustical ceiling tile. In all, from 1954 to 1959, sales and sound-conditioning tile to retail building materials establishments increased an amazing 230%.

**Three newest products** of the insulation board industry — insulating roof deck, nail-base sheathing, and shingle backer—have been picking up sales steam during 1960 because of their inherent quality and cost saving factors.

Insulating roof deck units are component, three-in-one products which provide the structural roof deck itself, effective insulation, and the finished inside ceiling. The product is made of ½-inch layers of insulation board laminated together with waterproof adhesives. The component units come in 2x8-foot sizes with interlocking or square edges, and in thicknesses of 1½, 2 and 3 inches. For areas of the nation where required, insulating roof deck is available with a built-in vapor barrier.

Insulating roof deck is nailed to the top of beams in homes, schools, or other structures with "cathedral-type" or exposed beam ceilings. Once the panels are in place, the roof and inside ceiling are finished with the exception of the application of built-up roofing or asphalt strip shingles to

package sale? Just tell us
about it and win
$3,000
cash
in the GREAT IBI
package salesman contest
PACKAGE SALESMAN CONTEST IS SPONSORED BY THE INSULATION BOARD INSTITUTE

**Package Salesman Program** was launched early in January to increase the sales of all insulation board products and to provide practical sales training help for sales personnel in retail lumber yards. The program started with advertisements in a national trade journal inviting retail building materials salesmen to enter the story of their most satisfying "package" sale in the IBI's Package Salesman contests.

Three separate contests were scheduled during 1960. Two have been held with an outstanding participation; deadline for the third is August 31. Eight cash prizes of $500, $250, $100 and five of $50 each are awarded for each of the three contests. The three first place winners automatically compete for a $2500 grand prize. Entries are judged by a panel of experts in building products merchandising on their relative merits as examples of outstanding package salesmanship, sales ingenuity, sales originality and relative competence and completeness of the sale.

A key requirement of the contest is that each package sales reported on by a salesman must contain at least one of the insulation board products—ceiling tile, sheathing, insulation roof deck, building board, shingle backer or wall plank.

In a special effort to help the retailing industry, the "case history" stories of each winner are published in a new IBI-sponsored magazine, PACKAGE SALESMAN. The magazine is published three times and contains the step-by-step package sales stories of each of the winners. It is being mailed to all of the nation's retail lumber yards.

the outside surface. Asphalt strip shingles are used only with the 2- and 3-inch thicknesses of insulating roof deck. Use of insulating roof deck components is chalking up substantial labor and materials savings for both commercial and home builders all over the nation.

**A new insulation board** product which is catching on rapidly with builders is high-strength, nail-base sheathing. This is a high-density insulation board sheathing available in 4x8- and 4x9-foot sizes and a thickness of ½ inch. With nail-base sheathing, which is applied to studs vertically with nailing as recommended by the manufacturer, corner bracing is not required—which saves builders valuable time and materials.

An important feature of nail-base sheathing is that wood or asbestos shingles may be nailed directly to it using the type of nail recommended by the manufacturers. This feature eliminates the time and materials involved in applying furring strips to the wall before shingling. Asphalt impregnated or coated, the insulation board nail-base sheathing eliminates the need for building paper and provides valuable wall insulation.

Insulation board shingle and shake backer boards cut construction costs by eliminating the costly undercourses of shakes normally needed to seal edge joints and create shadow lines. The backer boards are made 5/16 or ⅜ inches thick, 11¾, 13½, 15, or 15½ inches wide and 48 inches long. Applied right over insulation board sheathing, the backers help build strong, weathertight walls, and they give distinctive shadow lines to any structure. Some shake manufacturers apply insulation board backers to their shakes at the factory to save builders even more on-site time.

**Continuing trend** in the insulation board industry is to up-grade all insulation board products. The Insulation Board Institute carries on an extensive applied research program at the various educational institutions and commercial laboratories to develop new and improved existing products. As a part of the upgrading of insulation board products such products designed for interior finish use have been produced for several years with flame-resistant surface treatments.

As the entire wood products industry is aware, there has been a restrictive trend in building codes and legislation against the use of all combustible building materials. IBI and member company officials are continually meeting with code officials, legislators and fire protection authorities to insure that code legislation is proper and not based on unreasonable mass hysteria.

The "Operation School Burning" fire tests in Los Angeles, Calif., have clearly indicated that insulation board acoustical tile is not a life hazard in such school fires because it did not burn in any test until several minutes after temperatures and smoke densities were well above lethal levels.

As with many other branches of the wood products industry, imported foreign products are a constant problem. Last year, for example, some individual member companies were affected adversely by the wholesale "dumping" of foreign made insulation board products in some New England states. Comparative tests by American companies often reveal that foreign made insulation board products fail to comply with the high quality and performance standards set by the IBI.

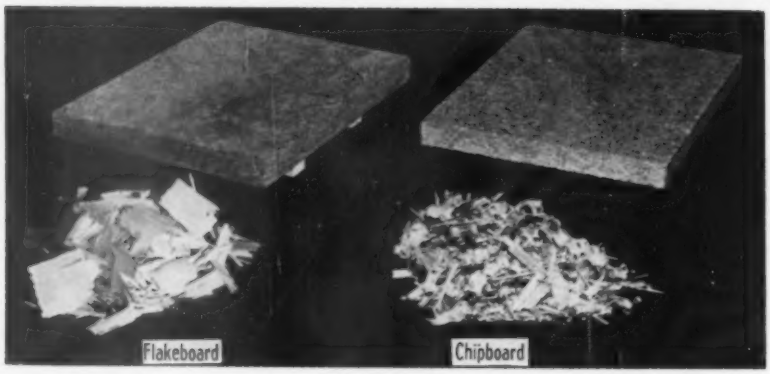
If distributors and retailers are to protect their own reputation for quality it seems obvious that they must guard against the stocking and selling of foreign-made insulation board which is inferior in quality. Yet, the import trend continues. One Scandanavian country, for example, increased its exports of insulation board and hardboard by some 40,000 tons in the first 10 months of 1959 as compared to the like period in 1958.

Increasing amounts are being budgeted by the member companies to insure improvement of existing products and creation of new insulation board products calculated to result in more economical and better homes for Americans.

Insulation Board Institute Officers are: President, J. V. Jones, general sales manager, Armstrong Cork Co., Lancaster, Pa.; vice-president, J. W. Brown, senior vice-president, National Gypsum Co., Buffalo, N. Y.; treasurer, J. K. Bolton, merchandising manager, insulation and hardboard products, United States Gypsum Co., Chicago, Ill., and assistant treasurer, M. M. Morris, general line merchandising manager, the Celotex Corp., Chicago, Ill. ■■

# Flakeboard vs. Chipboard

By ARTHUR L. MOTTET
Research Engineer, Long-Bell Division
International Paper Co.




Flakeboard costs more to manufacture, but sells for more. It excels chipboard in bending strength, stiffness, dimensional stability, freedom from show-through and machinability. Mr. Mottet discusses the major elements affecting the decision a particleboard user must make in selecting a particleboard type for his application.

The principal sources of additional cost of flakeboard are as follows:

**Wood.** To produce flakes with controlled thickness and length, solid raw wood, as distinguished from broken-down forms such as planer shavings, is required. While chipboard is to some extent produced from hammer-milled or attrition-milled chips obtained from solid wood, the preponderant volume is obtained from planer shavings. Raw wood cost for chipboards runs in the range of $2.50 to $7.50 per ton. For flakeboard plants, wood cost falls between $5 and $15 per ton. Although wood cost varies considerably according to local conditions, the average wood cost premium for flakeboard probably is in the range of $6 to $7 per thousand square feet of board, ¾-inch basis.

**Labor.** The precision cutting of wood flakes constitutes an additional manufacturing step. The additional man-hours per thousand square feet of board for this step, including grinding and changing of cutter knives, also depends a great deal on individual conditions. A cost of $4 to $5 per thousand square feet of board would probably be found to be fairly typical, if industry cost experience on this item could be compiled.

**Depreciation.** Some additional equipment investment is involved in the flake cutting operation. The differential in installed equipment cost amounts to approximately $20,000 per ton per hour of production capacity. On a 10-year write-off, this would be roughly equivalent to $0.50 per thousand square feet of ¾-inch board.

Approximate typical cost differentials for flakeboards as compared with chipboards can therefore be summarized:

| | $ per MSF ¾" Basis |
|---|---|
| Wood | $6.50 |
| Labor | 4.50 |
| Depreciation | .50 |
| Total | $11.50 |

Although selling price differentials

# New Particleboard Group Seeks Standards

A meeting of significance to the forest products industry took place in January of this year in Chicago. Representatives of particleboard producers from every corner of the United States met to discuss the needs and merits of a particleboard association to promote the use and acceptance of a rapidly increasing volume of particleboard products now available. The verdict was unanimous and the result—a new association called the National Particleboard Association was born.

The objectives of the new Association, which will headquarter in Washington, D. C., are stated as follows:

- To promote the acceptance and use of particleboard.
- To discuss, investigate and otherwise consider and deal with common technical problems pertinent to particleboard in the particleboard industry.
- To compile and publish information to benefit the industry generally, to the members, and to the public.
- To deal with trade promotions problems pertinent to the industry.
- To represent the industry in contacts with public officials, and public authorities.
- To work with representatives of other segments of the industry in related industries in connection with technical, promotional and other legitimate mutual problems.
- To do all lawful acts and things to promote and protect the welfare of the industry and the legitimate common interests of the members.

Officers of the new Association include: David C. Greeley, of Weyerhaeuser Co., Tacoma, Wash., president; Richmond Gray, Gray Products, Waverly, Va., vice-president; Richard L. Rinde, Roddiscraft, Arcata, Calif., treasurer, and William H. Cooke, Pacific Plywood Co., Pacqua Division, Dillard, Ore., secretary.

Directors, in addition to the officers, are as follows: Charles G. Reiter, Formica Corp., Cincinnati, Ohio; Ralph G. Peinecke, Pope & Talbot, Inc., Oakridge, Ore.; A. W. Teichmeier, U. S. Plywood Corp., New York, N. Y., and Jack W. Holdsworth, West Virginia Pulp & Paper Co., Tyrone, Penn.

run at present in the range of $7 to $20 per thousand square feet, it can be said that we are talking of a long-run basic cost difference to the purchaser of around $12 per thousand square feet, and our problem here is to appraise what the user receives for this extra expenditure.

Physical properties usually considered to be important in the various uses of particleboard are:

- Bending strength (flexural modulus of rupture).
- Stiffness (modulus of elasticity).
- Water absorption.
- Thickness swelling.
- Linear expansion.
- Screw-holding ability.
- Internal bond (tensile strength perpendicular to faces).
- Machinability.

**Bending strength.** Advertising brochures distributed by chipboard manufacturers show guaranteed minimum bending strength values in the range of 1200 psi to 2500 psi. The corresponding figures for flakeboards are 2500 psi to 4000 psi.

Although bending strength is the property most frequently used for purposes of comparison, it is a relatively unimportant one for most of the present uses of particleboard, provided an adequate minimum is assured. For these largely non-structural uses, little is to be gained by high modulus of rupture values. Bending strengths of chipboards are generally adequate. If flakeboard had no other superior points, there would be little to recommend its use over chipboard.

The particleboard industry, however, has been probing structural applications in the field of building construction in which bending strength and properties closely related to bending strength are of critical importance. It appears likely any large-scale entry of particleboards into structural applications must be based on flakeboards.

**Stiffness.** Modulus of elasticity values of 200,000 psi to 350,000 psi are claimed for chipboards now on the market. Corresponding figures for flakeboard are 400,000 psi to 650,000 psi. Stiffness, or rigidity, is a significant property in many of the present non-structural uses of particleboard panels such as table tops, case goods tops, case goods verticals, decorative wall paneling, and the like. The higher m.o.e. values of flakeboard offer the choice of better performance of the final product or of equal performance with thinner, lighter boards. With a ¾-inch chipboard product having 300,000 psi m.o.e. and selling at $100 per MSF, a customer receives 3,000 units of stiffness for each dollar expended. By going to flakeboard with 200,000 psi higher m.o.e. and $15 higher price, he is receiving 13,000 additional units of stiffness for each extra dollar expended.

As particleboards move into structural applications, the greater stiffness of flakeboards as well as the higher bending strength will be of vital importance.

**Water absorption.** There is no difference in water absorption tendency as between the major classes of flakeboard and chipboard. However, even if there were, this property in itself has little or no significance in relation to performance. The associated properties of thickness swelling, linear expansion, dimensional stability, and loss of strength on wetting are the significant ones directly involved in service performance and should instead be considered in appraising the relative utility of flakeboard and chipboard.

**Thickness swelling.** According to A.S.T.M. standards, this property is determined by calipering standard-sized specimens before and after a twenty-four hour immersion in water. Commercial flakeboards show thickness swelling values in the range of 3% to 5% while chipboard figures fall in the range of 5% to 8%.

In those applications where substantially less thickness swelling upon occasional or even rare exposure to wetting is of value, flakeboard offers a plus factor in performance which the specifier should appraise in relation to the additional cost involved. Sink tops, lunch counter tops, and table tops are examples of end uses where low thickness swelling could well justify a small cost addition.

**Show-through.** Theoretically, chipboards should show less thickness swelling than flakeboards. Chipboard particles are more granular in shape, and in the board structure a portion of them tend to be aligned more or less perpendicular to the board faces

*(Continued on page 61)*

Membership of the Association is open to all particleboard producers in the United States. Charter members of the association areas are: Brownsville Particleboard & Associated Products, Inc., Brownsville, Ore.; Chapwood, Inc., Philomath, Ore.; Formica Corp., Cincinnati 32, Ohio; Gray Products Co., Inc., Richmond, Va.; International Paper Co., Longview, Wash.; National Starch & Chemical Corp., Inc., New York, N. Y.; Pacific Plywood Co., Dillard, Ore.; Pope & Talbot, Inc., Oakridge, Ore.; Rock Island Millwork Co., Rock Island, Ill.; Roddiscraft, Inc., Arcata, Calif.; U. S. Plywood Corp., New York, N. Y.; Western Panel, Inc., Sweet Home, Ore.; Weyerhaeuser Co., Tacoma, Wash.; Wood Fibreboard Co., Portland, Ore.; Wynnewood Products Co., Dallas, Tex.; West Virginia Pulp & Paper Co., Tyrone, Penn.

Some of the immediate areas of activity for the Association will include the development and promulgation of commercial standards, promotion of the acceptance of the product by various government agencies for all end uses, and cooperative programs with resilient flooring tile manufacturers and others to develop and improve flooring system. A Technical Committee, under the leadership of Ray Platow of U. S. Plywood, is already at work in developing technical background for important Association programs.

Regular annual meetings will be held in January with the 1961 session already scheduled for Washington, D. C.

DAVID GREELEY, president

RICHARD GRAY, vice-president

Particleboard has been produced in the European continent for a good number of years but is a fairly recent development in the United States. The first U. S. plant was built in 1945 with a capacity of less than 2 million feet on a ¾-inch basis. In 1960, it's estimated there will be 70 to 75 plants in operation with an estimated annual capacity of 750 million square feet on a ¾-inch basis. Thus, in 15 short years, a new industry has come into its own and undoubtedly represents the fastest growing segment of the entire forest products picture in the United States. ■■

# You Don't Guess Quality . . . It's built into products by men,

**The authors**: Harold Demaray, left, and Robert Crawford check sample off production line at Pope & Talbot.

Statistical quality control is used in the manufacture of Customboard, the group trade name for Particleboard, Flakeboard and Blendboard manufactured at the Oakridge, Ore., plant. This program utilizes standard statistical methods whereby production and laboratory personnel can continuously and accurately monitor and control product characteristics.

**Use of modern automatic equipment** allows production personnel to devote most of their time to quality control checks. Twelve statistical quality control charts, maintained throughout the plant and in the laboratory, insure that the products will meet or exceed the guarantee of performance outlined in the company's published specifications.

### What is statistical quality control?

Statistical quality control recognizes the fact that no machine or raw material can be held in absolute control; they will fluctuate in accordance with a normal pattern. The limits of this normal pattern can be mathematically computed and control limits determined. These control limits are used by plant personnel to determine when machine adjustments should be made. Laboratory personnel use the charts to determine if the product is standard in quality and uniformity. Management utilizes the charts as a factual basis for making sound production policies.

Statistical quality control actually involves the statistical checks on each piece of manufacturing equipment to see that it is operating within defined areas of tolerances—and the laboratory checks on the boards to see that they are maintaining the quality of standards set up by the company. The latter is double checked against the working conditions of the plant, both mechanical and human.

**Specified quality** of the board, once determined from careful testing and checks, will be generally maintained as long as all manufacturing equipment is working within

2 Static bending tests to determine board modulus of rupture are part of continuous control testing program.

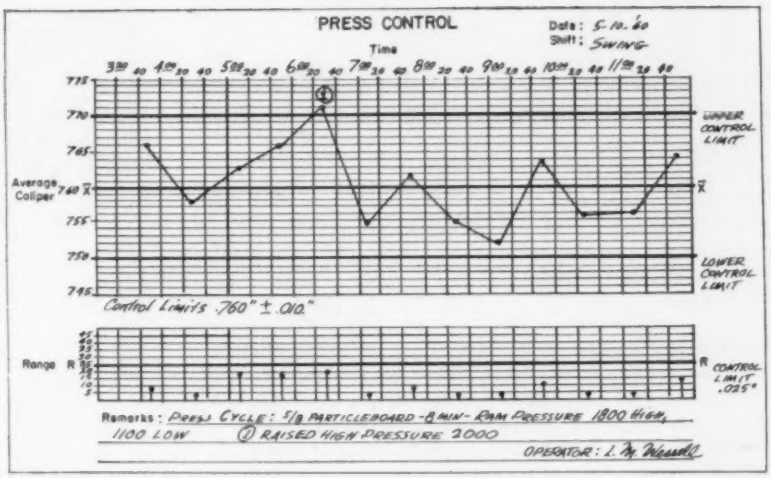
a specified range. The statistical control system keeps a constant vigilance over all operating conditions effecting board quality.

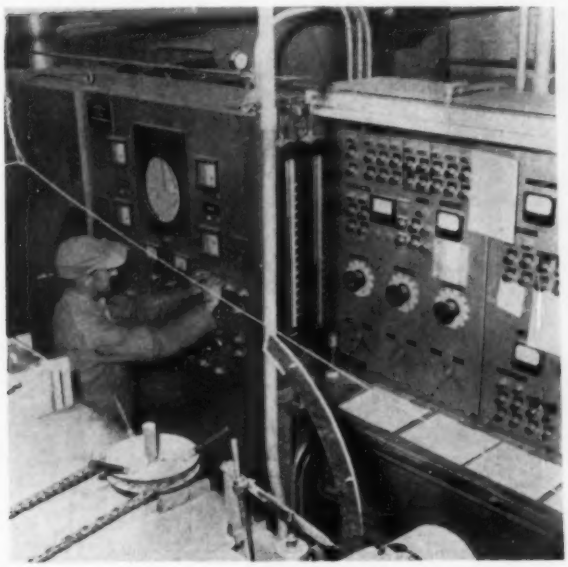
**A display board** is maintained for operators' charts covering the previous two days operations, and charts showing the physical properties of the boards tested in the laboratory.

This display board is located in the plant office so production personnel can see the results of tests made on the board they produced, as well as to compare their work with that of other shift operators. A quality product

equipment and raw material. Here's how Pope & Talbot, Inc., does it.

1 Control charts are vital. At left, charts for previous shifts are displayed in plant office so operators and supervisors can see effects of various operations on the final product quality. At right is a typical plus-minus and R Chart (average and range) used to maintain control of board thicknesses at press line. Limits or capabilities of press were mathematically calculated to be plus-minus .010 inches, therefore adjustment is necessary if a point falls outside these limits, or above the range limit. Each point on the plus-minus (average) chart represents the average thickness of boards from five consecutive press loads. A work sheet, not shown, accompanies this chart.



3 At mixing and mat forming station controls meter wax proportion and resin additives and keep record.

4 Press operator plots quality control chart that shows when adjustment is necessary for desired density.

is one that is produced by quality-conscious men. The displayed charts enable them to see the results of their efforts in the over all quality control picture.

Three different types of statistical charts are used in the quality control program. Names given by statisticians to these charts are the "p" Chart, or fraction defective; the X & R Chart, or average and range; and the frequency distribution chart. There are many types of control charts; their usage is dependent upon the method or desired end use. The charts were chosen for this program on the basis of their application to the process.

Location of charts and type used is outlined as follows:

Plant Process:

| Material Preparation System | Type Chart |
|---|---|
| (1) Flake thickness | "p" Chart |
| (2) Particle Moisture Content (from dryers) | Normal Distribution Chart |
| (3) Flake Moisture Content (from dryers) | Normal Distribution Chart |

*(Continued on next page)*

## YOU DON'T GUESS QUALITY *(Continued)*

**Forming and Pressing System**

| | |
|---|---|
| (4) Pressing Moisture Content | Normal Distribution Chart |
| (5) Mat Weight | X & R Chart |
| (6) Board Thickness | X & R Chart |
| (7) Board Weight | Normal Distribution Chart |

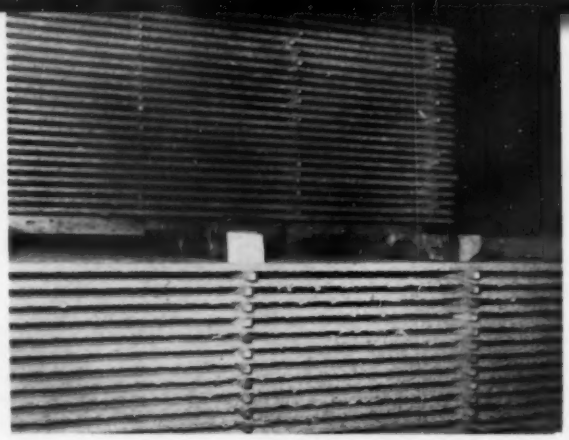
**Laboratory**

| | |
|---|---|
| (8) MOR (static bending strength) | X & R Chart |
| (9) IB (strength in tension perpendicular to surface) | X & R Chart |
| (10) Water Absorption (24 hour) | X & R Chart |
| (11) Thickness Swell (24 hour) | X & R Chart |
| (12) Density | X & R Chart |

The plotting of production variables on a control chart provides a minute by minute history of the process.

Immediately after pressing, the boards are stickered and conditioned for a minimum of 36 hours. While the boards are conditioning, the samples taken at the press line at random 2-hour or shorter intervals are tested in the laboratory.

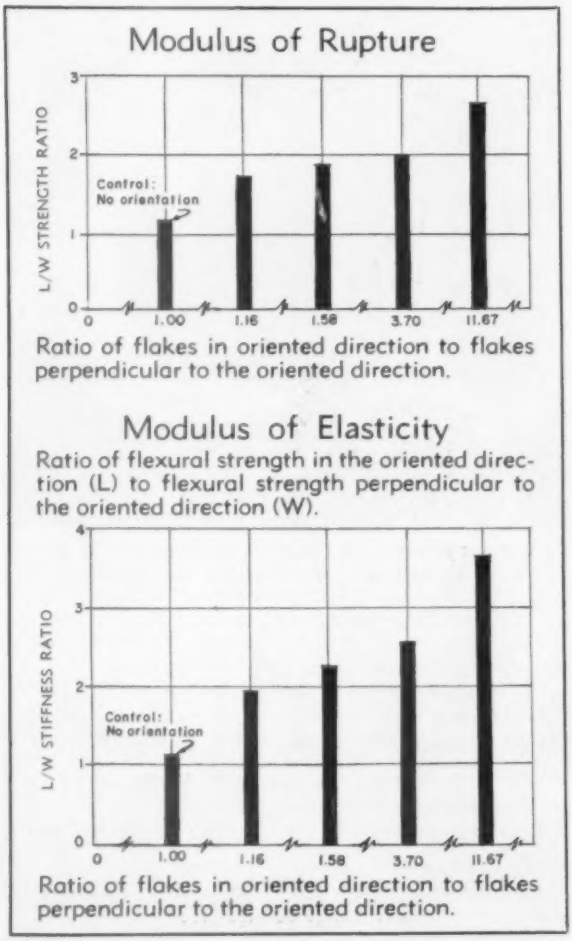
Providing the samples tested in the laboratory pass all



5 Immediately after pressing, boards are stickered for 36 hours of conditioning prior to sawing and sanding.

requirements, the boards are trimmed and edge marked to show the product name and a code system which identifies the production time. This code identifies the product with the 12 control charts previously listed. Any given panel may be traced back to the hour it was produced. The exact operating conditions at that moment can be determined and board quality quickly established.

Following the sawing operation, panels are sanded on an 8-drum sander. At this time the material is graded visually for surface defects. Normal control procedures are used to insure dimensional tolerance of plus-minus




# Directional Properties Possible in Flakeboard

**By JAMES BRUMBAUGH, Wood Technologist,**

**Washington State University, Pullman, Wash.**

The objective of this research was to determine the relationship of flake orientation to the various properties of flakeboard; namely, modulus of rupture, modulus of elasticity, internal bond, and dimensional stability.

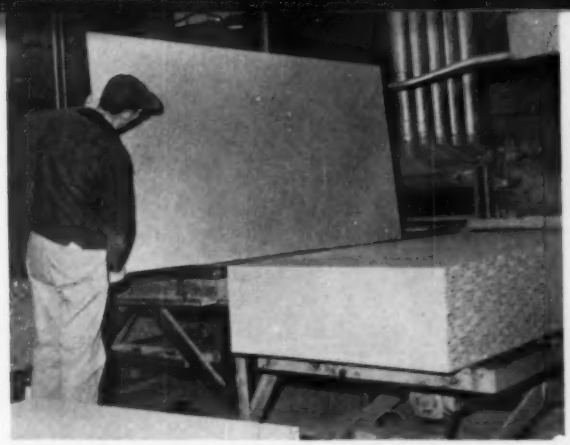
Various classifications of flake orientation[1] were obtained with 5-inch long flakes through the use of "V" shaped baffles, inverted and supported in the felter between the board mat and the rotating drum which distributes the incoming flakes.

The extent of orientation was controlled by varying the height of the baffles above the mat and by changing the distance between baffles. Experimental boards with 5% phenolic resin were made at two levels of specific gravity (0.50; 0.60), and four levels of orientation. A control set of unoriented boards were made for comparison with the oriented boards.

The test results are summarized in the table (right)[2] and the ratio of strength and stiffness in the oriented direction to strength and stiffness perpendicular to the

1 The extent of orientation is defined as the ratio of the per cent of flakes less than 45° from the oriented direction, to the per cent of flakes greater than 45° from the oriented direction.

2 The dimensional stability tests have not been completed. These consist of the change in thickness and length of boards after equilibrium is reached at a relative humidity of 50 and 90%.



6 Boards which pass standards established by control charts still get 100% visual inspection.

7 Stack of boards shows edge-printed trademark, and code which links the panel with manufacturing record.

1/32-inches and a thickness tolerance plus-minus 005. inches.

**Grade determination** of products occurs at three points during the flow through the plant.

(1) All conditions at quality control check points must be in control while board is being produced.
(2) Boards tested by the laboratory must meet specifications and fall within control limits.
(3) 100% visual inspection for appearance.

This program has offered Pope & Talbot the following benefits:

- Manufacturing variable can be kept under constant surveillance.
- Process fluctuations can be predicted before they are beyond control limits.
- Inter-relationship of manufacturing variables and product quality are more easily recognized.
- Operator techniques can be standardized on the best methods.
- Sub-standard products can be detected early in the process.

**Summary of data for internal bond strength, modulus of rupture, and modulus of elasticity of oriented flakeboard.**

| | | Extent of orientation* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1.00 | | 1.16 | | 1.58 | | 3.70 | | 11.67 | |
| Type of test | Specific gravity | //** | ⊥** | // | ⊥ | // | ⊥ | // | ⊥ | // | ⊥ |
| Internal bond (lb.) | 0.50 | 66 | 65 | 62 | 65 | 68 | 39 | 56 | 54 | 56 | 60 |
| | 0.60 | 105 | 104 | 88 | 96 | 79 | 82 | 82 | 80 | 90 | 97 |
| Modulus of rupture (psi) | 0.50 | 3230 | 2990 | 4120 | 2490 | 3160 | 1880 | 3740 | 1920 | 4240 | 1670 |
| | 0.60 | 4700 | 3940 | 5600 | 3110 | 5420 | 2630 | 5500 | 2700 | 6380 | 2310 |
| Modulus of Elasticity (psi x 10-5 | 0.50 | 1.89 | 1.81 | 2.76 | 1.49 | 2.53 | 1.06 | 2.90 | 1.16 | 2.96 | 0.95 |
| | 0.60 | 2.56 | 2.07 | 3.30 | 1.60 | 3.10 | 1.42 | 3.73 | 1.42 | 4.94 | 1.18 |

* Percent of flakes in oriented direction. (1.00 = no orientation)
Percent of flakes normal to oriented direction

** // Results of tests on specimens cut in the oriented direction.
⊥ Results of tests on specimens cut perpendicular to the oriented direction.

oriented direction is shown in the accompanying graphs. These strength and stiffness ratios were used as an additional measure of extent of orientation.

As expected, internal bond results were not affected by flake orientation. Since 2-inch square specimens are used for this test, there is no difference between the oriented direction and normal to the oriented direction.

Results of the modulus of rupture and modulus of elasticity tests were similar in nature. In each orientation classification, the sum of the results of the tests in the length and width directions of the oriented boards were equal to the results obtained from non-oriented boards.

However, the ratio of strength in the oriented direction to strength perpendicular to the oriented direction increased from 1.14 for the non-oriented boards to 2.65 for the greater extent of orientation. Similarly, the ratio of stiffness in the oriented direction to stiffness perpendicular to the oriented direction increased from 1.14 for the non-oriented boards to 3.65 for the greatest extent of orientation. (See graphs.) Furthermore, as board specific gravity is increased, strength and stiffness in the oriented direction increase faster than strength and stiffness in the "across-the-grain" direction.

Because the 5-inch flakes employed in this preliminary project were difficult to felt and because an intentionally poor spraying technique was used in adding resin to the flakes, the actual test values probably could be improved considerably with the use of 2- or 2½-inch flakes and a better spraying procedure. The results do show, however, the feasibility of producing flakeboard with "directional" properties for uses where greater strength or stiffness is needed in one direction than another. ■■

**3-color, walnut** wood grain finish on hardboard is so realistic that it requires close examination to tell it from the real wood.

By WALTER A. McKIM
Reliance Varnish Co.,
Florence, Ore.

# "Wood Faces" for Boards can be created in a fast operation that fills, then grain finishes panels in 3-color pattern.

A recent "break through" in face wood-grain reproduction will be of special interest to all board manufacturers.

Both particleboard and hardboard, like any other surface to be pre-finished, must be first prepared to take the final finish. In the field of decorative boards, face wood grain reproductions are a most practical and popular method.

**Prefilling of particleboard** is the first step in preparation or development for finishing (THE LUMBERMAN July 1959). The bottom knifing filler machine developed by Schmutz Manufacturing Co. of Louisville, Ky., embodies an efficient method of achieving results desired. The filler is applied by metered roll coater, then doctored off by scraper bars and blades.

During the past year a new treatment of the spring steel scraper blade has further improved the results. Fillers have been improved from the standpoint of better wetting of the boards and easier and more effective shearing from the surface. Better knowledge of production requirements has resulted in lower material cost per thousand square feet. It is also possible to tailor-make or formulate the filler to coat the board composition as well as to color-match the boards.

Both sides of the board should be filled to provide dimensional stability. Some boards, for top quality finishing requirements, are double filled on each side. Coating viscosity of the filler is lowered by controlled temperature rather than by use of excessive thinner. This minimizes filler shrinkage. With the tremendous pressure used in application of the material and then shearing this high solid material by means of blades, the shrinkage factor is still further minimized. Double filling, after a good wide belt sanding in between, is necessary where perfect surface for printing is desired.

Most of the fillers developed for this type of application will dry in approximately 60 seconds with a high velocity of warm air in a short oven. This drying period is sufficient to permit wide belt sanding without undue pickup of filler onto the belt.

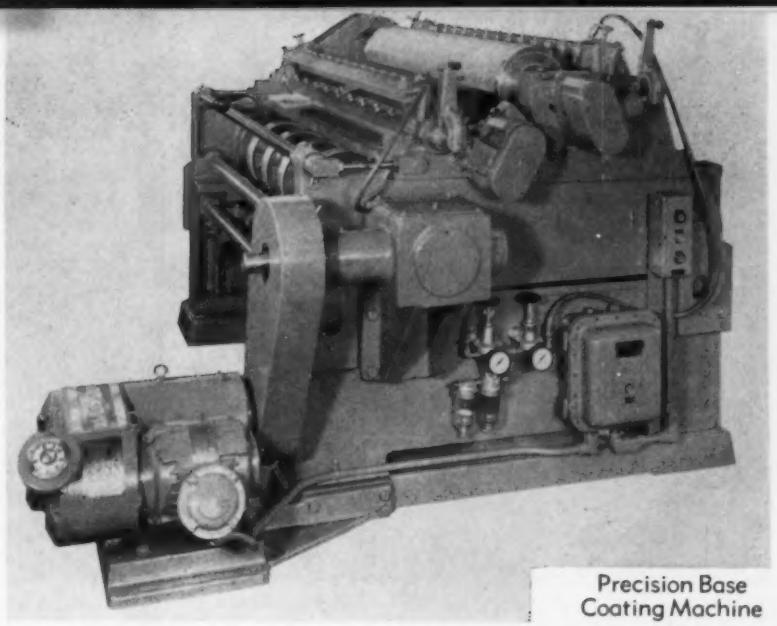
**Sealing.** In view of the variety of boards now on the market, there is no set rule for further upgrading. Some with higher density and greater surface fines are ready for finishing after double filling. Others require further treatment due to lower density, less saturated wood particles, uneven dispersion of binder, or perhaps to selection of moisture barrier.

For those boards requiring additional treatment, sealing appears to be the best method. Solvent-type face sealer is a very effective moisture barrier but should be applied to both sides to achieve maximum stability. The use of a water-base sealer has been perfected but its use depends upon the end-use requirement for the board. It is possible that the new water-base sealer, which becomes water insoluble upon drying, is an economical and safe method of sealing. The sealer must not only seal off the substrate, but must also act as a barrier to wax migration. Subsequent top coatings over the sealer must adhere well, without showing release of the entire system of filler, sealer and topcoat under a cellophane tape test.

The sealer may be applied to the board by means of ordinary rollcoaters, but it is possible to utilize the bottom filler coater for the operation. The same oven will dry the sealer. After sealing the board should not be sanded. This insures a distinct barrier to the penetration of solvents which sometimes tend to pull out some of the moisture barriers.

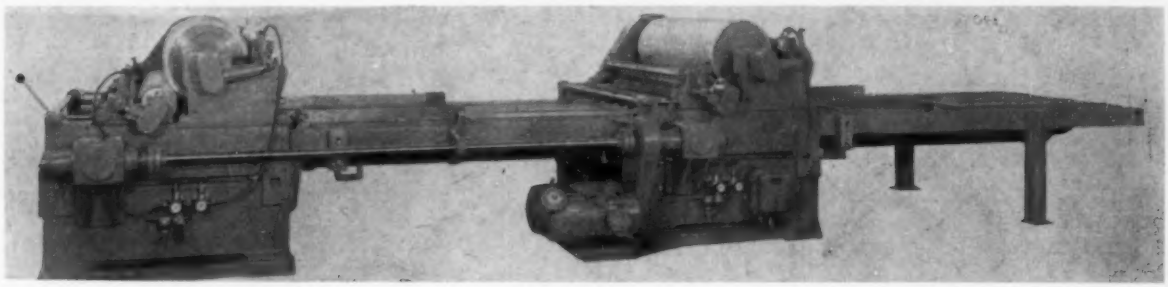
**Hardboard finishing,** particularly untempered hardboards, present a dif-

**Schmutz precision** base dual coating machine is a top coater for applying base color after panels have passed through bottom knife filling and sealing machine. It applies uniform base coat of proper color for graining. It may be set in tandem with printing machines.



Precision Base Coating Machine

**2-COLOR PRINTING** machine from Schmutz is below. Additional printer can be added for three color work. It prints exact design on every panel, or can be set to do random printing. Reliance colors used, dry almost instantly after printing of each color so unit may be hooked in tandem. Unit handles material from ⅛ to 4 inches thick, 52 inches wide and up to 10 feet long. Printing table remains stationary and printing heads are elevated.



ficult problem if a true surfaced finish is required. Imperfections in the surface of the panel are not visible until a coating has been applied. Most prevalent difficulty is due to the undulations that appear in the surface of the boards. Unfortunately the bottom knife filling machine will not do a satisfactory job of filling the low spots in the undulated board. We have found that the reverse rollcoater developed by Schmutz does the best job in leveling such boards. The filling material is not heavily applied by this machine, but is run with exceptionally heavy pressure on the board in doctoring off the excess material. It is this pressure, however, that packs the fibers and also levels the undulated low spots.

As in the case of the particleboard, a short oven giving about 60 seconds drying time, with high air velocity at a temperature of not over 140 degrees F. will dry the filler sufficiently for further treatment. It is not necessary to sand the board after this operation. The board at this point is now ready for the application of base coat on a remarkable new machine.

**Grain Reproduction.** Starting with either prefilled and sealed particleboard or reverse roll coated hardboard, it is now possible to produce a wood grained reproduction so realistic that it is difficult to identify from real wood grain. The process embodies the use of extreme pressure while applying the material to the surface.

The machine that applies the base coat is known as the Schmutz dual precision coater. This very ingenious machine applies a completely opaque base color coat that will not show any track marks as do ordinary roll coaters. It does not require an oven to dry the coating, nor is there excess material applied at this point. The pressure used in applying the high solid base-coat does the job so exactly that no excessive coating is needed.

**Base-coat air dries instantly** so it may enter the multicolored printing machine at once. This results in a saving in base-coat material of about $2.10 per thousand sq. ft. of board covered. It also means the elimination of both a baking cycle to cure the base coat and the sanding of the base coat. The result is a surface so near perfect that rejects at this point are at a minimum.

Immediately following the application of the base coat by the precision coater, the boards enter a Schmutz 2 or 3-color registered printer. Fast-set ink is applied by 20-inch cylinders giving a grain repeat only after each 60 inches of printed surface. This allows sufficient travel for ink drying before reaching the second and third cylinders.

Without having to dry the ink, the boards now enter the final top coat application. The same type precision coater will lay down a special type of top coat without any indication of how it is applied. There are no tracking marks from the coating machine, there is no execessive amount of time allowed for flash off, the material can be dried in an oven in a very short space of time and upon cooling may be inspected and packed.

We have mentioned the fact that all coatings are applied under pressure. This is the important factor in the whole consideration of durability. The precision coater not only lays down the clear top coat in a very accurate thin film at an estimated savings of 89c per thousand square feet, but also gives the added advantage of greater scuff resistance and toughness.

This new method of wood grain reproduction eliminates the artificial appearance, reduces materials and equipment costs, almost nullifies rejects and produces a beautiful finish. ■■

1 Planning in the early stages of the composition board plant brings together in conference, from left: N. E. Nelson, D. L. Schubert, R. W. Riley and E. T. Smythe of the Industrial Development Co., Inc., staff.

2 All data from preliminary studies will be tested in the laboratory to determine if they are feasible. Shown conducting tests are, from left: Cliff Rice, Dave Mullen and Wyman Williams.

# Five Stages in Developing a Board Plant

By E. T. SMYTHE and DALE L. SCHUBERT
Industrial Development Co., Inc.
Tacoma, Wash.

Due to the growing interest being shown by firms who wish to investigate the composition board field, this article will attempt to define the major areas which are investigated. The sequence that is now being used for the development of board plants through their different preliminary stages and completion is discussed in stages.

Major emphasis should be placed on the need for a thorough analysis of market potential, species, and nature of the raw material available.

## Stage 1 is preliminary research

Preliminary laboratory work to determine the kinds of board that can be made.

- This work at the laboratory level is conducted with the available raw materials. The highest quality board that can be produced from this material is determined.
- Preliminary check is made on resins available from resin companies. The various resins which are available are evaluated by producing laboratory samples with the available raw material.
- All possible processes are investigated.

## Stage 2 evaluates preliminary data

- A very careful evaluation of all the reports and test data are undertaken at this point to determine the feasibility of continuing the plant development.
- Recommendation are made as to further research work along the lines of laboratory boards and evaluation of different resins. This is the point in the development of the manufacturing process where the decision is made to continue laboratory work in any area which might indicate a weakness in board properties, perhaps due to some particular species.
- Preliminary market survey is made based on laboratory samples. The sales organization is informed of the type and quality of board which is to be produced. Sales people contact some of their larger customers to determine the degree of acceptance and to establish customer reactions.

## Stage 3 is a pilot plant

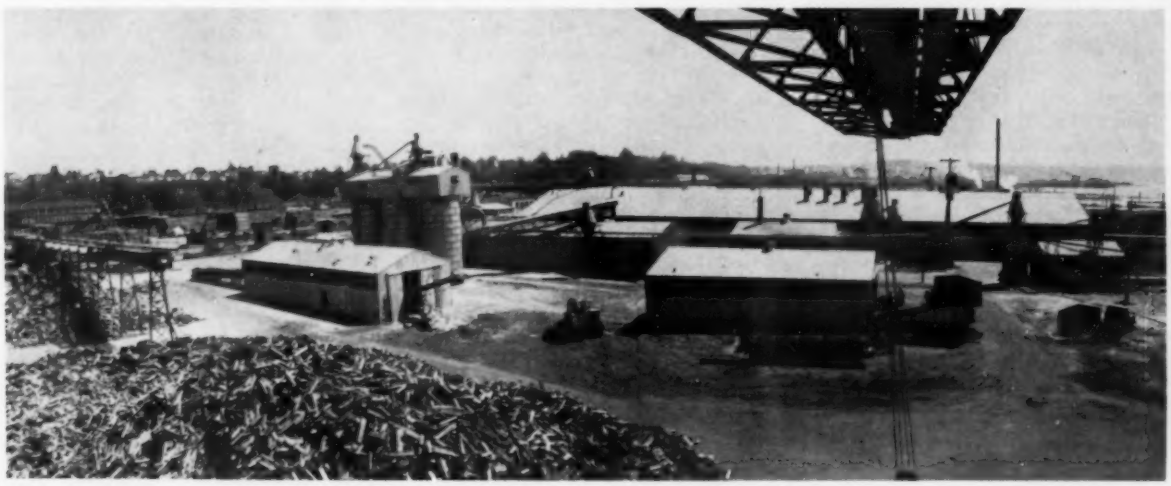
Pilot plant is full scale 4x8-foot plant using established process, resin content, press temperatures and cycle times.

- This includes a production run of several hours under actual production conditions producing 4x8-foot boards.
- Pilot plant production is tested and evaluated. Panels produced under production condition are tested and evaluated.
- Panels from the pilot plant production run are shipped to prospective dealers for dealer reaction, thus completing the market survey. By shipping production boards to prospective dealers and analyzing the dealer reaction, the final phase of the market survey can be completed.

3 Pilot plant tests determine quality of material and product. Above, M. F. Andrew and Mullen check flakes. Below, the finished panel is looked over by, from left, Bob Geddis, Mullen and Williams.

4 Results of the pilot plant tests provide information on the product, and a guide to pre-engineering and cost estimates which are worked on in the drafting room by Don Sangesand, left, and Vern Nelson.

5 The final results, an operating flakeboard plant. The engineer's service will carry through construction into actual production during which training will be provided for the operating personnel.



## Stage 4 sets plant size, cost

- This stage of the plant development will establish the scope of the project, size of buildings, machinery required, and an accurate capital cost estimate of the project.
- Plant layout and machinery evaluation tailored to fit the particular job is made at this time in order to insure the accuracy of the cost estimate, and to assist in setting up preliminary time schedules for construction and start up.

## Stage 5 is plant construction

Engineering and purchasing contracts consist of:

- All engineering.
- Taking bids and evaluation proposals, and writing bid abstracts.
- Writing purchase orders.
- Supervision of plant construction.
- Supervision of machinery installation.
- Supervision of start-up period.
- Training of operating personnel.

In conclusion, the degree of success of a board plant project will be dependent upon the combined efforts and abilities of the people charged with the responsibility for all stages of its planning. If any deficiencies occur in the above stages, it would likely show up in costly delays in start-up and operation of the plant; therefore, it is imperative that very careful and competent planning be made for all phases. ■■

**Marketing plans** are studied by production and sales personnel, from left: Woody Johnson, plant manager, insulating board products; Jack Wetherby, sales manager, insulating board products; Harvey Warnaca, manager, insulating board products; Jack Haney, sales promotion manager.

# Here's How Simpson Takes Product to Market

Cooperative thinking is the byword of the insulating board division of the Simpson Logging Co. Simpson recognizes that no one individual has a corner on promotional ideas and creative thinking. Most of its marketing plans are the result of ideas, suggestions and market knowledge furnished by the salesmen in the field, regional managers, customers, and many others with whom they come in contact while performing their job as a building materials manufacturer. The product sales manager and the sales promotion director mold and shape these ideas into a comprehensive marketing program. This approach tends to be more realistic than academic because sources of ideas are people with a sound knowledge and a close relationship with all levels of the building material field.

No matter what the marketing plan may be, a certain set of ground rules are following in relation to its direction, objectives and costs. Because Simpson Logging Co. products are sold through wholesale channels only, Simpson must depend on its wholesale customer as an extension of the sales force.

**This singular type** of market distribution allows the following "ground rules" to be apropos in almost every promotion:

- Projected profits from proposed promotion should pay the cost of the promotion, plus a reasonable profit.
- Promotion programs should facilitate the placing of an innventory of the new product, or promoted product, in good representative retail dealers throughout the country.
- A promotion program should enable the company to have several thousand displays (number depends upon the nature of the product) in lumber dealers' showrooms throughout the country.
- Do all of the above in a short period of time (often in a period as short as 30 days).

To put together, and successfully put across, a program of this type requires the complete cooperation and coordination of production, advertising department and advertising agency, and general management with the product sales manager and sales promotion director. Once the program is accepted and approved, all of the segments of production and sales pull together to accomplish the objectives desired. Debate and difference of opinion may exist during the conception of the program, but once it is formalized and accepted, the entire production-sales team works in close harmony. This philosophy has been one of the primary reasons for the number of successful promotional programs introduced by Simpson.

**One such program,** for the introduction to the national market of three new acoustical tile products, was planned in the spring and summer of 1959 and put into operation in the fall. Experience has shown that the introduction of a new product of this type is best accomplished by a concerted and intensive effort. By a concerted effort, Simpson is able to very favorably influence customers, sales people, and to get the new products beyond the customer, the wholesale lumber dealer, and within one step of the ultimate consumer.

Much of the advertising, particularly the consumer-type advertising, is designed to help move products from the retailer to the consumer. Publications selected for the integrated advertising program are picked for their influence on the retail lumber dealer, the architects, the contractor, and the ultimate consumer.

In order to encourage distributors and distributor salesmen to make a maximum effort to move new acoustical tile to the retail dealer and place the 10,000 displays budgeted for, a national contest was conceived, called "Operation Bowl Goal."

During an August sales meeting, the plan was presented in final form to the sales force. By this time, a large inventory of the new acoustical products had been manufactured; 10,000 displays of the new products had been designed and manufactured; brochures describing and picturing the new products were printed and ready for distribution; and the national advertising and publicity releases were ready to hit the newstands.

Immediately upon return to their territories, the sales staff contacted distributors, explained the contest, and obtained orders for the necessary inventories of the new products that would qualify the distributor to participate. Displays were calculated at the rate of 30 per distributor salesman, and had to be backed up in sales by a specific quantity of the new acoustical products. The coming contest was announced to the distributor salesmen at a breakfast meeting immediately prior to the opening day of the contest.

**The contest itself** was reasonably simple in that each distributor salesman was awarded a predetermined number of points for each display he placed in a retail lumber dealer's showroom, up to 30, and points for each carton of acoustical products sold. The team aspect was emphasized. The grand prize for the winning distributor was an all-expense paid four-day trip to the bowl game of their choice, for all of the salesmen registered in the contest and their wives, plus the pertinent management and their wives. The winner was judged on the basis of the highest average point per salesman.

In addition to this, there were first, second and third regional prizes (eastern, central and western regions) for the highest individual salesman.

The winning salesman of each distributor firm received a prize.

By breaking down the prizes on a national, regional and local level, all of the distributor sales personnel had an excellent opportunity of winning something.

The contest was successful beyond expectations and more than fulfilled the objectives set forth.

New products presently in the promotional planning stage, for release early this summer, are a non-bearing insulation board partition, faced on both sides with wood grain printed hardboard, and a matching wall paneling composed of insulation board with a wood grain printed hardboard facing. ■■

R. D. WOOD COMPANY

# How to grow in the booming industry of composition board production!

**Whether expanding *present* facilities . . .**
**or installing a new production system . . .**

let R. D. Wood Company put their complete knowledge of the wood processing industry to work in the design and production of *your* hydraulic press installation. Wood Presses are built to perform for years. Many expandable design features help you grow in proportion to ever-increasing demands. Here's how . . .

*Gear your production for growth, keep abreast*

# R. D. Wood Presses – engineered

*will meet your needs for years*

Grow with the press manufacturer who knows your needs and how to meet them. R. D. Wood Company! When you buy a Wood Press you're buying sound, dependable performance for many years to come. You're set to meet any market demand—profitably.

**Specific Experience** R. D. Wood Company knows the wood composition board industry—and they know the press business. This combination gives you the advantage of gaining pertinent knowledge and experience which can be applied to your specific problems.

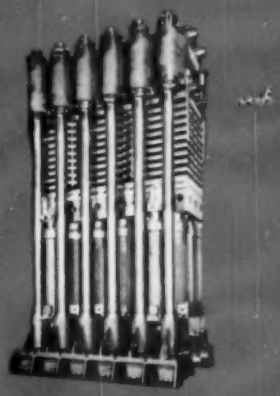
**Finest Quality** Only the highest manufacturing standards and top quality materials are used in Wood Presses to guarantee you smooth, dependable performance; fast, economical production; trouble-free operation—features you naturally expect with a Wood Press.

**Sound, Imaginative Engineering** When your complete hydraulic press installation is designed, it's engineered to meet your present requirements *and*, if you desire, to anticipate future expansion. With sound planning, you can increase production without excessive time loss during conversion and without a major equipment investment. In some cases, you can actually *double* production with one machine.

**Engineering Service** You get the benefits of experienced engineers who can advise you in preliminary planning, then save you money in the press design by utilizing basic R. D. Wood plans and applying your specifications and modifications. You suit your needs, yet save valuable engineering dollars!

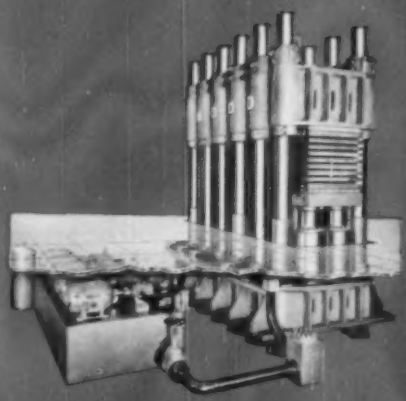
**A Complete Line from which to Choose** You can get any size or capacity you need for your press operation, plus necessary valves, platens, accumulators, accessories. Shown here are a few of the basic presses available . . . one, or more, can meet your needs—exactly!

*Choose your press from this complete line of composition board presses. For other special processes such as Chipboard, Flakeboard and Particle Board, there's a Wood Press to fit your exact requirements. All presses can be furnished complete with pressure and exhaust steam manifold and steam piping, self-contained, motor-driven pumping systems or valving and piping to operate from your accumulator systems. In addition, each press is designed to fit automatic loading and discharge units.*



**For Dry Process Hardboard**

Machine Number 8197, accumulator operated hydraulic press. Capacity, 7,500-tons; platen size, 54" x 150"; number press openings, 10; height of press, 24'11"; floor space, 10'9" x 14'4". (Can be furnished with self-contained pumping unit if required.)

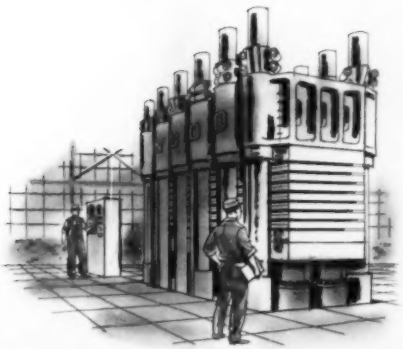


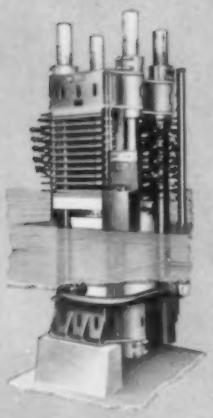
**For Dry Process Hardboard**

Machine Number 9423, self-contained hydraulic press. Capacity, 8,300-tons; platen size, 54" x 200"; number press openings, seven expandable to 15; height of press, 25'; floor space, 11'3" x 15'9" (press only).

*of a thriving industry . . .*

# for top production



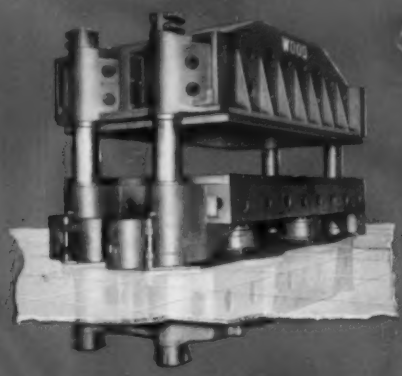


**For Dry Process Hardboard**

Machine Number 9282, self-contained hydraulic press. Capacity, 4,000-tons; platen size 56″ x 116″; number press openings, ten expandable to 16; height of press, 28′; floor space, 20′ x 20′.

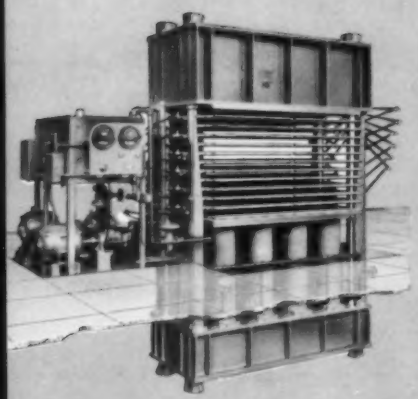
**For Wet Process Hardboard**

Machine Number 9313, self-contained hydraulic press. Capacity, 3,675-tons; platen size 54″ x 198″; number of press openings, ten expandable to 20; height of press, 33′; floor space, 11′6″ x 16′7″ (press only).



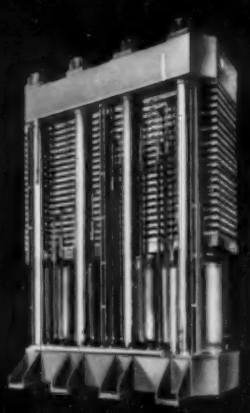
**For Composition Board**

Machine Number 9467, self-contained hydraulic press. Capacity, 1,200-tons; platen size, 13′10″ x 9′1″; height of opening, 3″—opens to 24″ for inspection and maintenance; stroke of rams, 24″; height of press, 14′; floor space, 18′2″ x 9′1″.



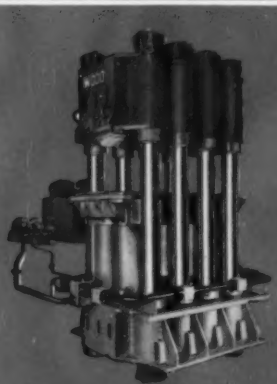
**For Plywood**

Machine Number 9292, self-contained hydraulic press. Capacity, 625-tons; for manufacturing sheets 50″ x 100″; stroke of rams, 39″; press openings, 12; height of press, 17′1″; floor space, 8′2″ x 20′8″ (press and pumping unit).



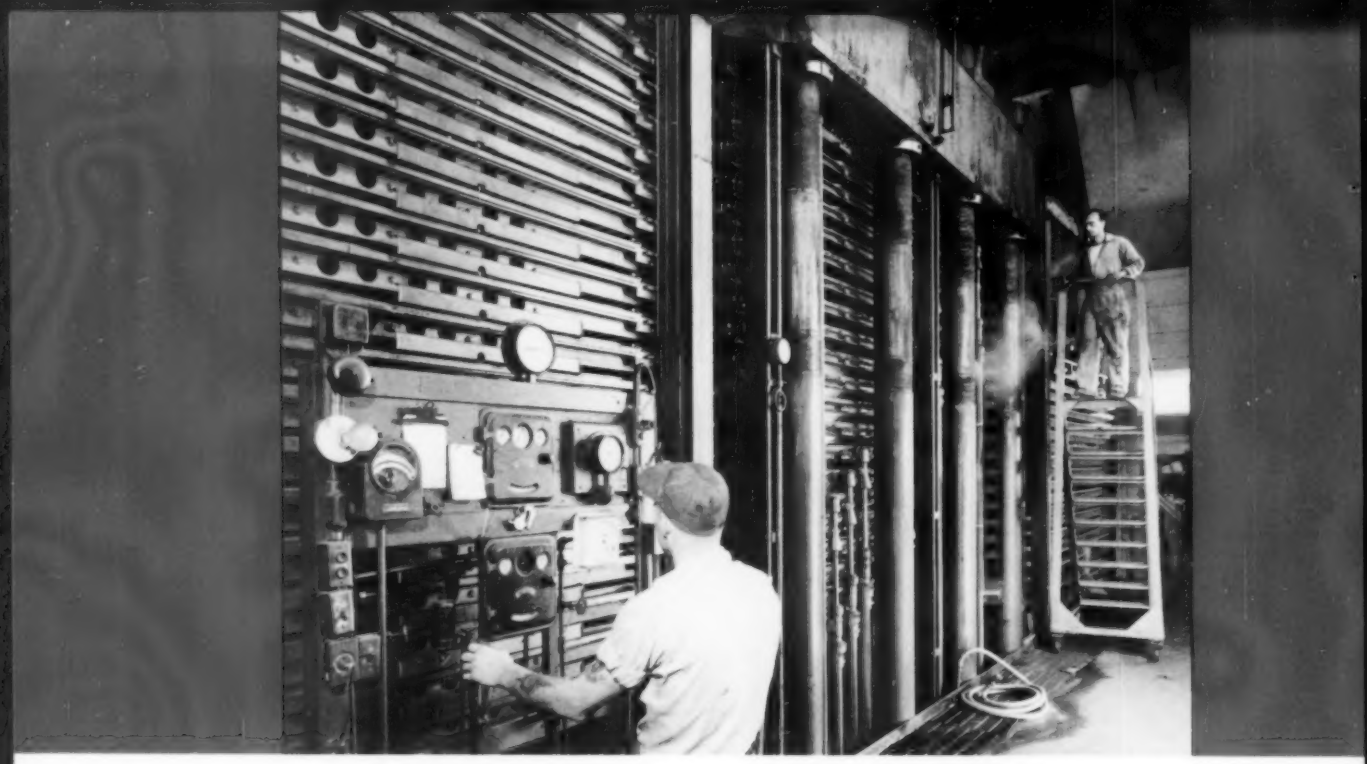
**For Wet Process Hardboard**

Machine Number 9471, self-contained hydraulic press. Capacity, 3,600-tons; platen size, 54″ x 198″; press openings, 20; height of press, 33′; floor space, 11′6″ x16′7″ (press only).



**For Special Processes**

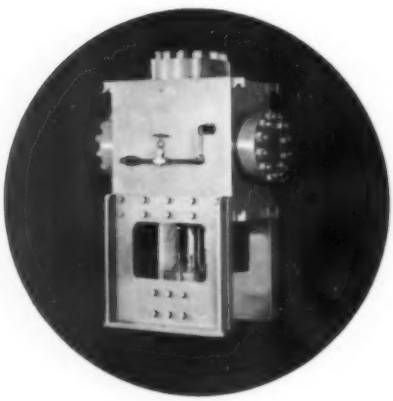
Machine Number 9402, combination press for cement-asbestos board and corrugated cement-asbestos board, self-contained, high-production hydraulic press. Manual, semi-automatic or fully automatic. Capacity, 6400-tons; platen size, 55″ x 151″; single opening; height, 3′10″; height of press, 23′; floor space, 12′ x 12′ (press only).



# *R. D. Wood precision-engineered steam heated platens...*
## *give you superior finished products*

Here's the perfect working surface for your board products. R. D. Wood Platens are precisely manufactured to give you the highest grade surface finish so that you can produce top quality products—consistently. They are made from solid steel slabs, machined to parallel tolerances of .003″ to .0015″ and drilled with extreme precision on accurately spaced centers to insure equal heat distribution throughout the platen.

There are three grades of finish available—*smooth tool finish*, provides a true surface suitable for most commercial applications; *emery-and-oil-finish*, used where processed material directly contacts platen, and exactly uniform product surface is not required; and *high polish emery-and-oil-finish*, completely free of tool marks, for direct contact processing with uniform surface appearance. Sizes range: 7′0″ x 34′0″ or 8′0″ x 26′0″, either steam or electric. *Perfect for your new press. Perfect for replacement on existing presses.*



**Every valve you need for a complete hydraulic system.**

When installing a new system or updating an existing installation, you can get any valve you need from one source . . . R. D. Wood. Choose from a complete line of stop valves, check valves, operating valves, safety relief valves, shock absorbers, accumulator control valves, a large variety of special valves. With each you receive the same reliable performance as with every Wood Press, because they're built to handle the toughest jobs—resist the roughest treatment.

**First step to composition board production—contact R. D. Wood Company**

Here's the logical way to start *your* plans for expansion. From R. D. Wood Company, you can get the benefits of the experience of many years, and many press installations, to be applied to your own situation. Write today for further information and be one step closer to a more profitable business.

**R. D. WOOD CO.**

PUBLIC LEDGER BUILDING • PHILA. 5, PA.

## *To step up board production*
## SPECIFY AUTO-SET 31* BY *Borden!*

Borden's *new* self-setting particle board binder—Auto-Set 31*—gives you highest production efficiency at lowest cost. There's no separate catalyst to add, no mixing equipment, no mixing errors to hamper production and no chance for jelling or setting up resin in mixer or spray system.

Laboratory and field tests indicate that Auto-Set 31* can offer you at least several of the following advantages: Minimize surface precure—improve internal bond—cut resin requirements up to 20%—shorten press cycle time—reduce formaldehyde odor. *And*, Auto-Set 31* allows consistent production of the highest quality board product.

Auto-Set 31* is backed by the experience and know-how of Borden wood technologists, chemists and engineers. And Borden's adhesive laboratories are at your service to help solve particle board production problems.

Write The Borden Chemical Company, Dept. L-70, 350 Madison Avenue, New York 17, N.Y.

*PATENT APPLIED FOR

IF IT'S A ELMER *Borden* *Chemical* IT'S GOT TO BE GOOD!

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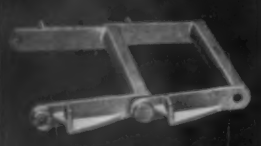
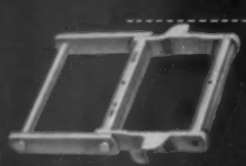
# selection chart

Compare these most popular Moline Mill Chains. Here is information in condensed form listing mill chains and their available attachments . . . range of sizes . . . application data . . . and capacity range. It's a selected part of the new, recently published 36-page Moline Chain Manual and Design Engineers' Handbook which is now offered free to chain buyers. Write today for your copy.

## FOR TRIPLE-TESTED MOLINE MILL CHAINS*

| | CHAIN TYPE & NUMBER | APPLICATION AND INSTALLATION | ATTACHMENTS | PITCH RANGE IN INCHES | ULTIMATE STRENGTH (IN LBS.) |
|---|---|---|---|---|---|
| | H-Type Mill<br>H-60, H-62, H-74, H-75, H-78, H-82, H-85, H-87, H-95, H-124 | Designed primarily for heavy drives and transfer conveyors in saw mills, and pulp and paper industry but widely used throughout industry. Strong and rugged, provided with wearing shoes for stiffness and long service life. | A-1-12<br>F-4<br>G-1-6-19-48<br>H-1-2<br>K-1-2 M-3<br>R & L RR | 1.654 to 4.000 | 7,000 to 30,000 |
|  | Refuse Chain<br>H-97, H-98, H-102, H-104, H-110, H-112, H-113, H-116, H-117, H-118, H-120, H-122, H-480 | Widely used in troughs for dragging sawdust and other waste material. Face designed to push material along without over-riding. Larger sizes capable of moving large capacities at moderate speeds. | C-1-3<br>RR<br>Wing | 5.00 to 8.00 | 20,000 to 40,000 |
| | Transfer Chain<br>C-55-A, C-55-B, H-78-A, H-78-B, H-130, H-131, H-138 | Used in parallel strands for carrying boxes, crates, lumber and heavy concentrated loads. Available in both detachable and riveted construction and in "peaked" and "flat roof" designs; intended for operation in troughs. | | 1.631 to 4.000 | 9,000 to 23,000 |
| | Combination Chains—C-55, C-77, C-102-B, C-102½, C-110, C-110-C, C-111, C-111-C, C-131, C-131-C, C-132, C-132-C, PW-132, C-188, MW-188 | Very rugged and serviceable for use in bucket transfer and many other types of elevators and conveyors. Widely used in pulp and paper, lumber and other industries. Pin and cotter assembly or riveted construction. | C-3-132<br>RF-12 F-2<br>G-6-19<br>K-1-2-3<br>LL-25 | 1.631 to 6.050 | 9,000 to 50,000 |
|  | Combination Type Mill Chain<br>6104, 6110, 8116, 8480 | Moline combination type mill chain is designed to replace regular H-type conveyor chains because of its greater ultimate strength in corresponding sizes. Has larger diameter rivet, better bearing areas between pin and link, rivets and sidebars of high carbon steel. | | 6.00 to 8.00 | 42,000 to 56,000 |
| | Moline "Standard" or "Special" Flights<br><br>Pangborn Type | Attached to Moline Long Link Chain, these flights provide an economical and efficient method of handling saw and pulp mill refuse. Moline design permits clean scraping action with greater capacity. Standard or high face types available for trough operation. | | Standard:<br>Overall Length—12-16"<br>Height—2¾-5¼"<br><br>Special:<br>Overall Length—12-32"<br>Height—2¾-7" | |
| | Moline Log Chains<br><br>Light Duty<br><br>Heavy Duty | Especially designed for heavy duty service hauling logs from pond to deck. Loop links with several sizes available designed for precision fit in chairs. Extra heavy construction for long life and service. | | Light Duty:<br>Overall Width—15"<br>Tooth Height—4⅞"<br><br>Heavy Duty:<br>Overall Width—15"<br>Tooth Height—6-7" | |

Write today for your free copy of the new Moline Conveyor Chain Manual and Design Engineers' Handbook.

60 YEARS IN LUMBER SERVICE

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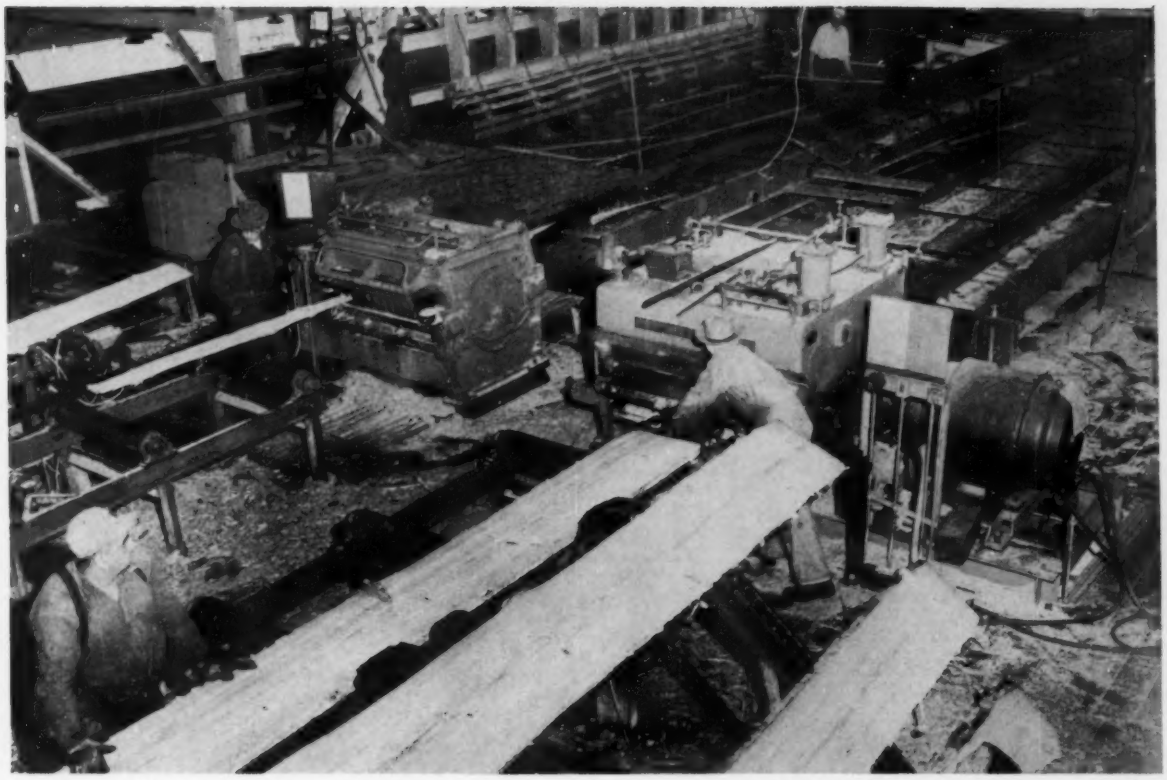
# Moline Chains

MOLINE MALLEABLE IRON CO., St. Charles, Illinois

Specializing in the manufacture of chains



PORTLAND IRON WORKS Edgers in operation at POPE AND TALBOT'S, Port Gamble, Washington, plant. Standard Edger on left, Precision Edger on right.

# "PRECISION" EDGERS WITH PROFIT POWER!

Engineered to exacting tolerance, designed with a preciseness found in the world's most *sensitive* machinery, PORTLAND IRON WORKS "Precision" Edgers are built to make money for you.

Maintenance costs are nil. Parts are readily accessible though tightly enclosed with flush fitting covers. Simple, but incredibly powerful, accurate and enduring. 8" or 10" capacity, PORTLAND IRON WORKS "Precision" Edger is of clean, trouble-free design.

A massive frame of finest steel provides stability under toughest known operating conditions. This inherent strength, the precision fitting of each part, and design based on seventy-five years' experience, provide a production pushing mammoth. An investment in a PORTLAND IRON WORKS Edger pays daily dividends for the life of your mill.

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PUSH BUTTON **GRADE MARKING**
CONTROL TO MEET LATEST
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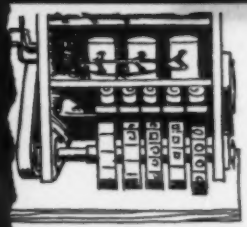
# MAGNESTAT

## MEMORY SYSTEM

Simplest memory of all, easy to install Redco Magnestat sets new standards of economy and efficiency in grade marking lumber to FHA specifications.



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**Now Redco Magnestat offers a system of memory control featuring:**

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*Magnestat the Ultimate in Memory Control Systems for the Forest Products Industry*

TRIM SAW CONTROLS CONVEYOR CONTROLS LUMBER SORTER CONTROLS

# Improved Particleboard

*(Continued from page 16)*

basic board. Raw materials must be reduced to a uniform aggregate composition and dried within close enough limits to provide the maximum particle characteristics for production systems. One of the most critical areas is the felting operation. Just the deposit of the proper weight of material as uniformly as possible is not enough. Close attention must be given to particle orientation and any subsequent leveling or overlaying operations. These factors have an important effect on the physical properties and surface characteristics of the product.

We must find chemical additives with which we can treat the particles, which are sufficiently economical that they may be used in volume to truly coat and substantially protect the board from excessive reaction to moisture penetration. It is to be hoped that such a process will be different from tempering oil procedures which are difficult to efficiently incorporate in an automated production system. It would be ideal to be able to treat the particles prior to the pressing operation so the heat and pressure of hot pressing could be utilized to complete the reaction. Some interesting work along this line has been done with good results and much more development will come in the future.

**Board surfacing possibilities.** Some producers have had success with three layer boards for which special particle blends are prepared. These provide a finished board with a smoother, less porous, stronger surface. In order to achieve truly improved surfaces on particle board, it may be necessary to consider it the board producers job to provide as good a foundation as possible over which a new surface must be applied. The answer may be in the combination of bulk natural fibers and proper synthetic chemicals.

More attention is and must be given to marketing. Particle board is sold, it is not distributed. The consumer doesn't really know much about particle board as yet. Most of the successful selling has been and will continue to be done by educating potential consumers as to what particle board can do for them. Probably only a fraction of the potential users of particle board even know the product exists.

**"Filling the consumer's needs"** are words we must remember—for particle board is a product that can be tailored to provide a variety of valuable properties designed to meet customer specifications. ■■

## FLAKEBOARD vs. CHIPBOARD *(Continued from page 43)*

and thus should have a restraining action on the swelling of particles aligned parallel to the board faces. The thin flat flakes of flakeboard tend to be aligned more completely parallel to the faces and thus have less opportunity for cross-alignment.

The reason for this difference is the thinness and the relative uniformity of flake thickness in flakeboards in contrast with the much greater average particle thickness and the greater range in particle thickness in chipboards. The pressing operation results in abnormal compression of a substantial fraction of the thicker, chunkier particles in chipboards. Later, when the board is exposed to moisture or elevated relative humidity, compression recovery takes place in addition to the normal hygroscopic swelling of the wood cells. This action results not only in a higher thickness swelling percentage, but, far worse in terms of service performance, results also in non-uniform swelling. The non-uniform swelling is transmitted to the surface of overlaying veneers, plastic laminates, and floor tile, and results in "show-through."

Freedom from show-through associated with properly manufactured flakeboards is doubtless one of the most important items of additional utility which justify the flakeboard price differential in a large part of present applications of particleboards. This applies not only to furniture items such as tables, chests, counters, and the like, but also to wall paneling to which fancy wood veneers are applied and to flooring underlayment to which flexible floor tile such as those of asphalt, rubber, and plastic are applied.

That flakeboards be properly manufactured to avoid show-through cannot be over-emphasized. Boards produced from flakes with too great average thickness and with poor control of thickness, so that numerous sticks and chunks are present, will have most of this advantage cancelled out. In such flakeboards, performance is on the same level as that of chipboard.

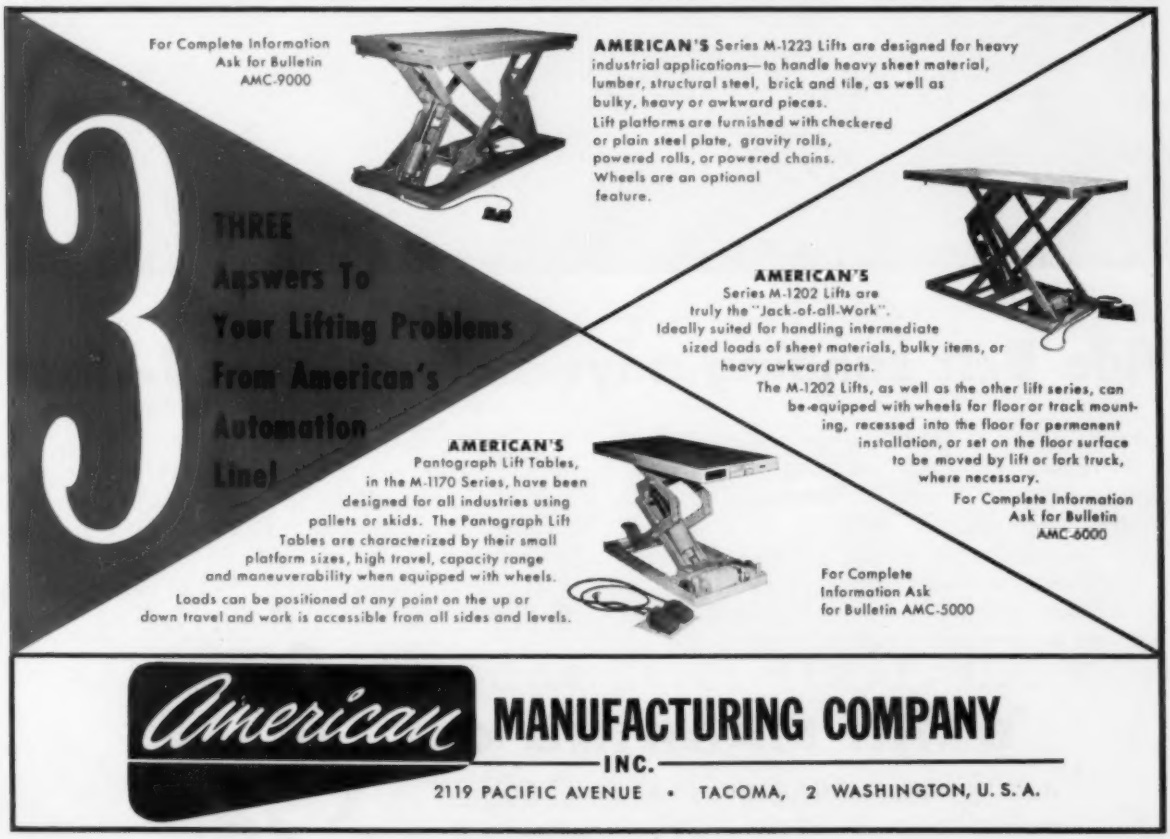
**Linear expansion–dimension stability.** Linear expansion of flakeboards averages approximately 0.15% as against 0.45% for chipboards. The foregoing figures are based on expansions between 50% and 90% relative humidity levels. Stability of length and width of an article when exposed to varying atmospheric conditions is a plus item of value in itself for many applications.

However, a far greater contribution arises out of the fact that linear stability also reduces the chance of warping, which is a more frequent and more serious cause of difficulty in fabricated items incorporating wood in sheet form. The item of linear expansion must be listed as one of the prime factors a specifier or user should evaluate in relation to the price premium.

**Screw-holding ability.** All tests indicate that the screw-holding ability of flakeboards and chipboards is about equal.

**Internal bond.** On this important property, flakeboards and chipboards are in general very close, and flakeboard has nothing additional to offer in justification of a price premium.

**Machinability.** No precise measures of machinability are available. However, when sawing, routing, drilling, and shaping comparison is made of boards at same densities and same resin content levels, flakeboards on the average show a clear-cut superiority affording smoother cut surfaces and sharper edges. Here, also, the proviso of flakes with properly controlled thickness and elimination of sticks and chunks in the furnish must be made, if the full potential of machining characteristics is to be realized. A good chipboard can be superior to a poor flakeboard in this property. ■■



3
THREE Answers To Your Lifting Problems From American's Automation Line!
For Complete Information Ask for Bulletin AMC-9000
AMERICAN'S Series M-1223 Lifts are designed for heavy industrial applications—to handle heavy sheet material, lumber, structural steel, brick and tile, as well as bulky, heavy or awkward pieces. Lift platforms are furnished with checkered or plain steel plate, gravity rolls, powered rolls, or powered chains. Wheels are an optional feature.
AMERICAN'S Series M-1202 Lifts are truly the "Jack-of-all-Work". Ideally suited for handling intermediate sized loads of sheet materials, bulky items, or heavy awkward parts.
The M-1202 Lifts, as well as the other lift series, can be equipped with wheels for floor or track mounting, recessed into the floor for permanent installation, or set on the floor surface to be moved by lift or fork truck, where necessary.
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AMERICAN'S Pantograph Lift Tables, in the M-1170 Series, have been designed for all industries using pallets or skids. The Pantograph Lift Tables are characterized by their small platform sizes, high travel, capacity range and maneuverability when equipped with wheels.
Loads can be positioned at any point on the up or down travel and work is accessible from all sides and levels.
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American MANUFACTURING COMPANY INC.
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# Wide Belt sanding pays off for plywood—fast!

You make a better product; you get greater production. Fifty-inch wide belt machines are running through at nearly 100 f.p.m. as compared with drum sander feed speeds of up to about 20–30 f.p.m. And machine automation can greatly increase this rate since speed today is limited primarily by the ability of the off-bearers to grade and stack the panels. Wide belt sanding is ideal for straight-line operations.

You get a more agressive cut: .006″ on birch, .015″ on mahogany with a 2/0 (100-grit) belt. You can polish to a matte finish or a sheen. And you can get as high as 20,000 linear foot production from one wide belt.

For a copy of our reprint, "Wide Belt Sanding in the Plywood Industry," write Dept. L-7.

**BEHR-MANNING CO.**

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A DIVISION OF NORTON COMPANY NORTON

BEHR-MANNING PRODUCTS: Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes • Floor Maintenance Products
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Steel strapped bundles stack higher, are fast and easy to count.

Signode Power Strap Feeder puts strap around bundle of 27 doors in seconds; air power tensions strapping. Fibre-board sheets and wood runners top and bottom protect door surfaces.

# Low cost Signode method of unitizing flush doors

## ...cuts loading time in half
## ...reduces in-plant handling
## ...reduces in-transit damage
## ...saves time and space in storage

One-at-a-time handling of smooth, slick flush doors has been changed by steel strapping to mechanized handling of multi-unit bundles. Damage from handling, storage, and shipment has been reduced, and substantial amounts of time are saved in the handling, storing, and loading operations. These same advantages appeal to the distributor, make unitized doors easier to sell. The savings and advantages far outweigh the costs of unitizing. Total material cost of the 27-unit bundle, for example, is $1.38, of which only 18 cents is for steel strapping and seals. The Power Strap Feeder, which permits one man to strap big bundles, saves enough to pay for itself from the start. For more information about this application or to find out how Signode can help you cut costs and improve handling and shipping, call the Signode man near you, or write:

SIGNODE

*First in steel strapping*

**SIGNODE STEEL STRAPPING CO.**

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Portland, 1519 N. W. Irving St. • Seattle 4, 1750 Occidental Ave. • Spokane, 617 Paulsen Bldg.
Canadian Steel Strapping Co., Ltd., Vancouver, B. C.

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**SCHMUTZ BOTTOM COATER**

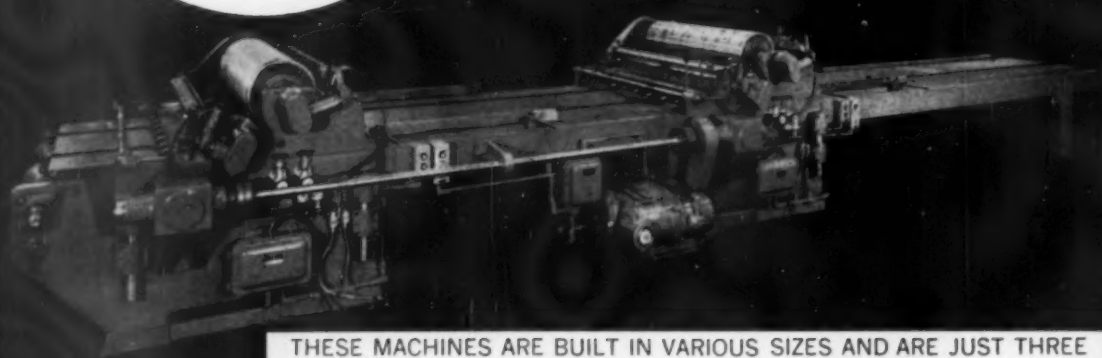
FOR SEALING AND FILLING PLYWOOD, CHIPBOARD, PARTICLE BOARD, ETC.

**SCHMUTZ PRECISION COATER**

THE AMOUNT OF COATING MATERIAL APPLIED CAN BE VARIED AND CONTROLLED VERY ACCURATELY.

**SCHMUTZ 2-COLOR WOOD GRAIN REPRODUCING MACHINE,**

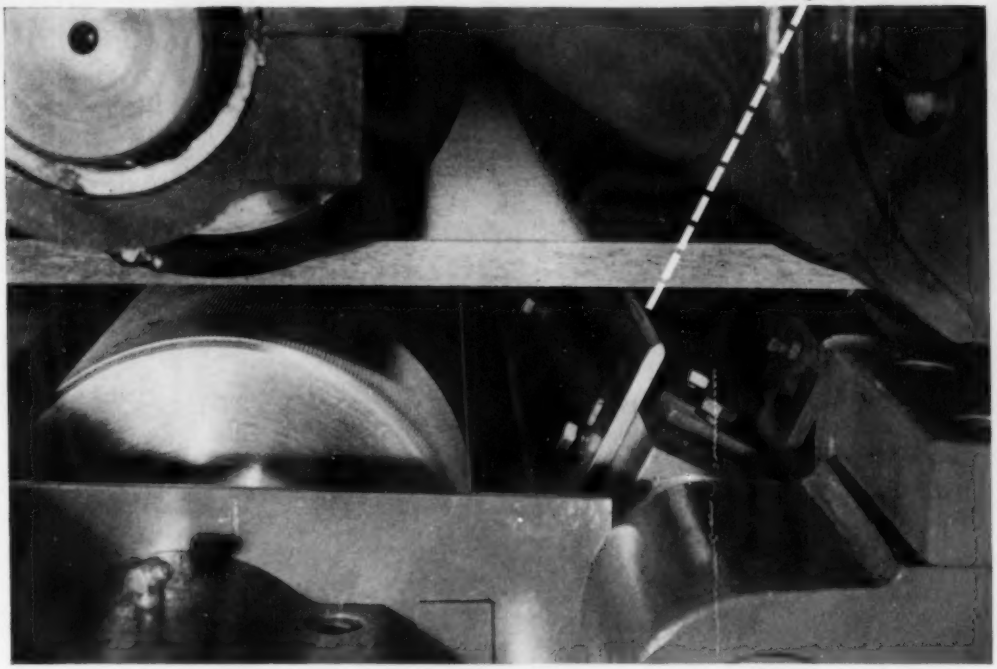
WITH ACCURATE REGISTRATION OF COLORS ON EVERY SHEET PASSING THROUGH. WILL ACCOMMODATE ENGRAVED CYLINDERS FROM 9" UP TO AND INCLUDING 20" IN DIAMETER. MACHINES ARE BUILT IN ONE, TWO AND THREE COLORS.



THESE MACHINES ARE BUILT IN VARIOUS SIZES AND ARE JUST THREE OF MORE THAN 50 DIFFERENT TYPES WE MANUFACTURE.
LET US TELL YOU MORE ABOUT THEM!

**SCHMUTZ MFG. CO.** 1600 W. MAIN LOUISVILLE, KY., U. S. A.

# Reliance filler-sealer applied by knife-coating



**Reliance "Filler-Sealer" makes an excellent foundation,** fills wood pores, small cracks, veneer glue joints, and slight depressions that normally appear in veneers, solid woods and particle board.

Reliance "Filler-Sealer" is formulated for high speed production with extremely short drying cycles. The filling and sealing properties of this product promote smooth surfaces, allowing economy amounts of succeeding coats.

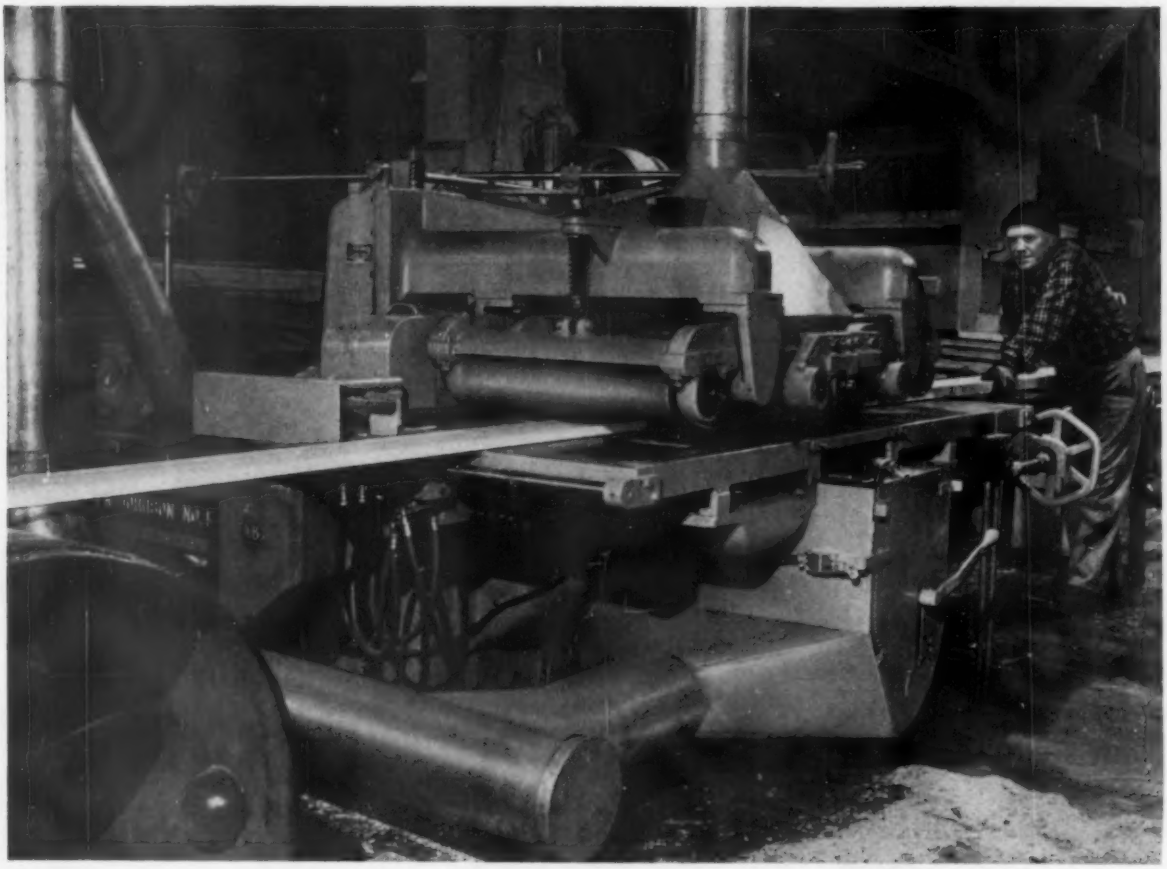
Reliance has a complete package of chemical coatings, operational methods, and equipment guidance for prefinishers of furniture and architectural parts.

For complete information, write: Reliance Varnish Company, Inc., 4730 Crittenden Drive, Louisville 9, Ky. In California: Write Reliance of California, 5025 East Slausen Avenue, Los Angeles, Calif.

Reliance

*Engineered Chemical Coatings*

**Plants in: Louisville, Ky. • North Chicago, Ill. • Bridgeport, Conn. • Los Angeles, Calif. • High Point, N. C. • Roanoke, Va.**



# Mereen-Johnson **441-A SPLITTER**

## Saves Money and Manpower at Potlatch Forests, Inc.

A new Mereen-Johnson 441-A Splitter has established impressive cost savings for Potlatch Forests, Inc., Coeur d'Alene, Idaho, because it has completely eliminated one re-planing process and the need of re-assorting for grade as done previously. P.F.I. has been able to reduce its force by four men as a result of the combined splitting and re-planing services the machine can perform.

Potlatch Forests, Inc., cuts logs from its own timber stand and ships them to the plant. Due to a 15 per cent average run of common grades, and an annual volume of 70-75,000,000 board feet, up-grading was necessary.

Utilizing the combination features of the M-J 441-A Splitter there is no necessity to operate a feeder, grader, planer and rip-saw.

With the 441-A Splitter the re-manufactured lumber can reach the final stage of production two days sooner than under the old method. The 441-A now eliminates those additional steps that were once a necessity.

The M-J 441-A Splitter permits Potlatch to up-grade by one or two grades. It eliminates a complete production step saving them money, manpower and time.

Write for information on the 441-A on your company letterhead.

MEREEN-JOHNSON MACHINE COMPANY
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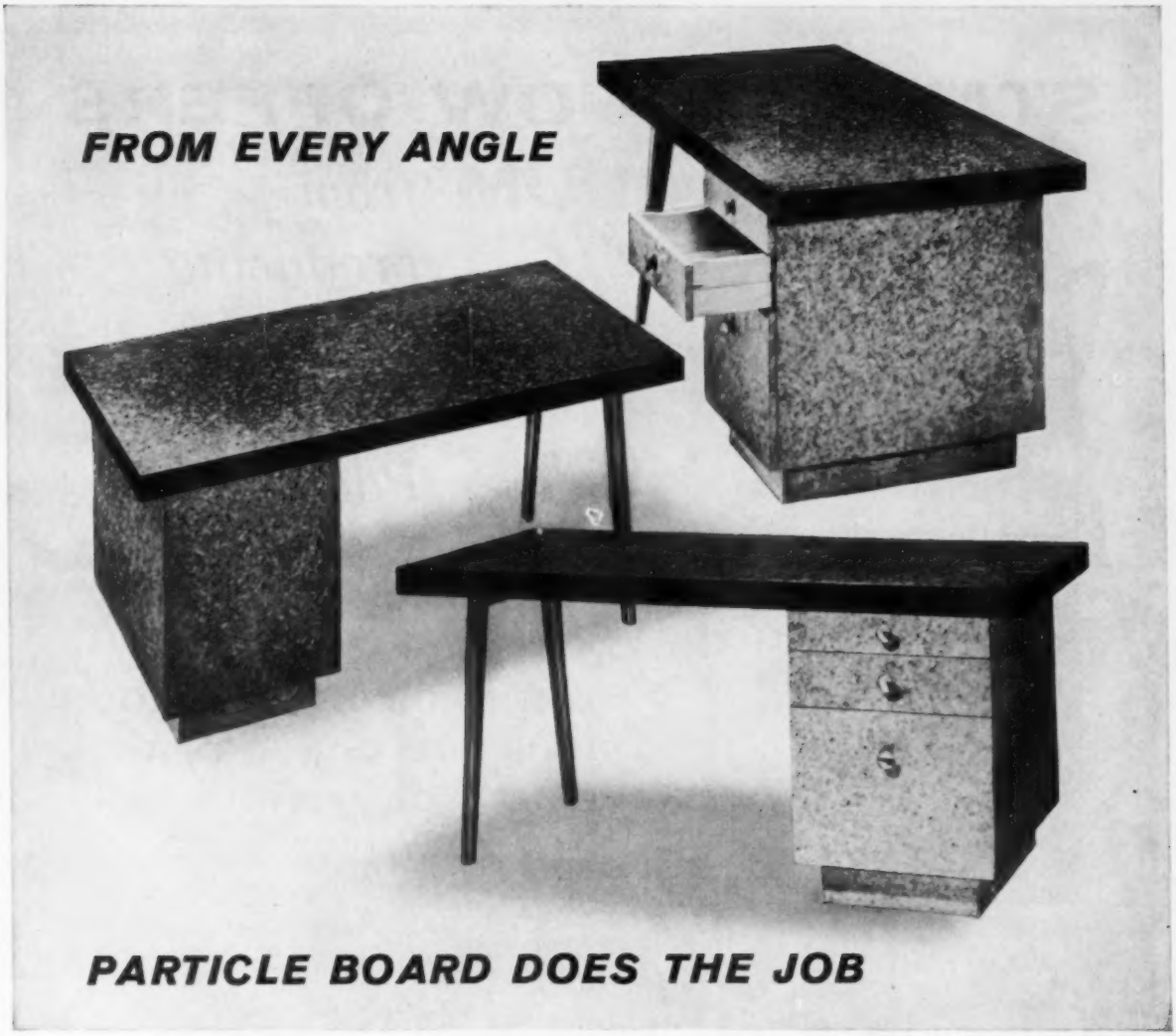
CUT-OFF SAWS • DOUBLE CUT-OFF SAWS • MULTIPLE CUT-OFF SAWS • TENONERS
GANG RIP SAWS • VENEER & PLYWOOD SIZERS & JOINTERS • RESAWS




## A Versatile Furniture Material

• The trend today is toward wider application of particle board in furniture manufacture.

Particle board is actually better than the wood of which it is made. It's tougher, harder, more versatile . . . free of grain, knots or weak spots. It's easily machined, holds screws better than lumber, and adapts easily to laminating and veneering processes. Successful uses of particle board in furniture today include cores, drawers, backing and decorative surfaces.

These and other applications point to an increase in usage that places added importance on the adhesive chosen to bond the wood particles securely together: it must be of consistently high quality to insure dependable, uniform strength in the finished board.

Reichhold can fill all your regular and special glue needs from a practical range of urea-formaldehyde, phenol-formaldehyde, and polyvinyl acetate adhesives. When you do business with RCI you can also count on these invaluable extras . . . fast, reliable delivery all over the country and expert technical aid when you need it.

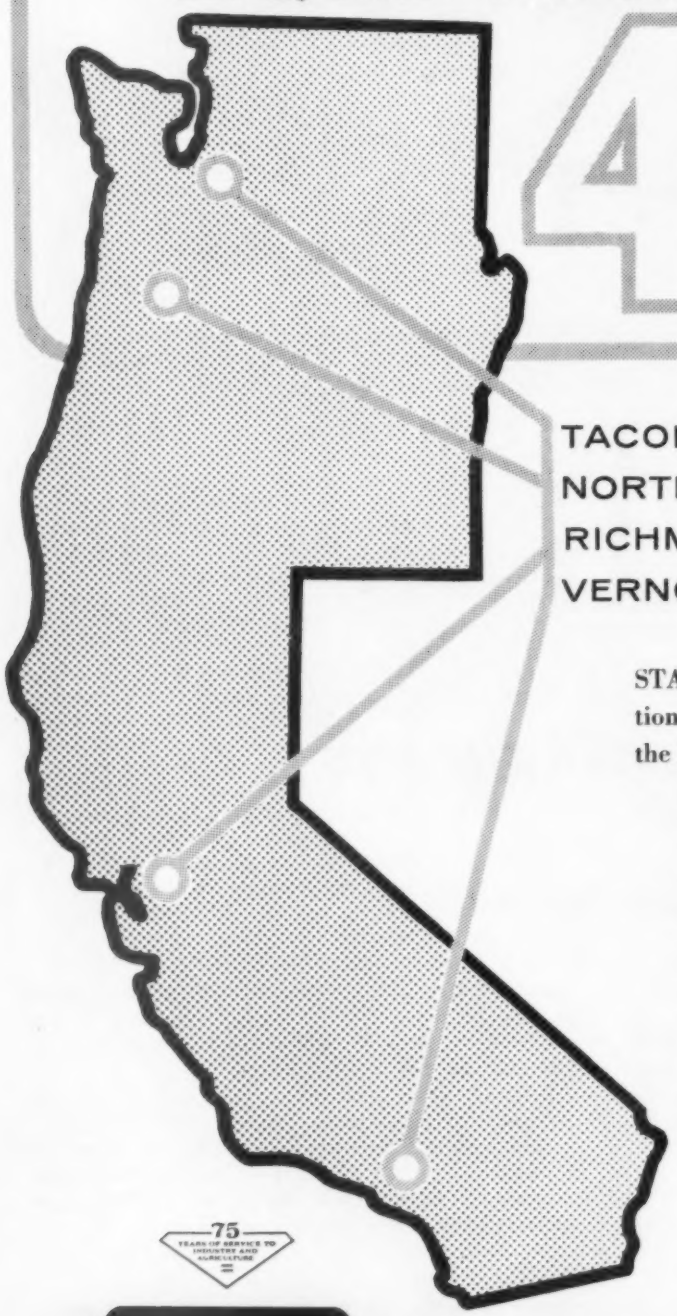
*Creative Chemistry . . .*
*Your Partner in Progress*

RCI **REICHHOLD**

**REICHHOLD CHEMICALS, INC., RCI BUILDING, WHITE PLAINS, N.Y.**

Synthetic Resins • Chemical Colors • Industrial Adhesives • Phenol • Hydrochloric Acid • Formaldehyde • Phthalic Anhydride • Maleic Anhydride
Ortho-Phenylphenol • Sodium Sulfite • Pentaerythritol • Pentachlorophenol • Sodium Pentachlorophenate • Sulfuric Acid • Methanol

# STAUFFER NOW OFFERS LIQUID ALUM *from 4 producing points on the Pacific Coast*



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STAUFFER has also earned its reputation as a dependable source of supply to the BOARD INDUSTRY for

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# The seal test was a stopper...

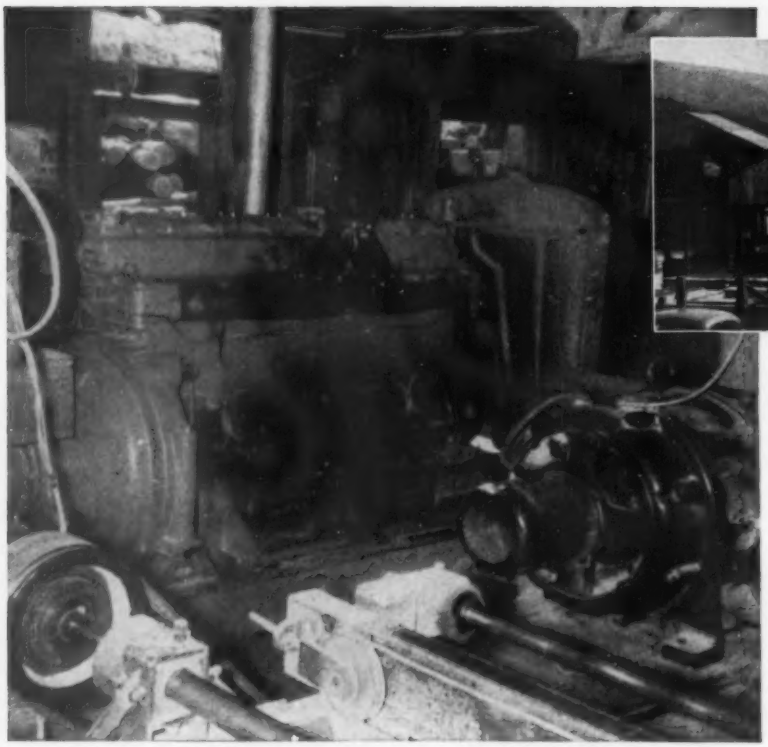
...in a lot of ways. Our tester wanted to stop the whole thing.

The test program proved that the seal in a Shafer Roller Bearing stops the entry of dust, dirt, abrasive particles. Nothing gets in...or out. Grease stays in for longest bearing life. And the seal is easily removable for bearing inspection without taking the bearing off the shaft. Ask your authorized Shafer-Rex Salesman, or write: CHAIN Belt Company, 4653 W. Greenfield Ave., Milwaukee 1, Wis. In Canada: CHAIN Belt (Canada) Ltd., 1181 Sheppard Ave. East, Toronto.

SHAFER® REX®

CHAIN BELT COMPANY

**SHAFER REX IS BEST...IN THE USER TEST**



*This 161 HP (continuous) Murphy Diesel powers a 48" sawmill producing 12,000 board feet of hardwood lumber per day. Saw and edger are belt-driven from engine extended shaft. Power for the balance of the mill equipment is furnished by the 20 KW generator mounted next to the engine and driven from a special crankshaft pulley by V-belts.*

## Here's why so many lumber companies choose

# MURPHY DIESEL POWER

## to cut costs per board foot

Every part of a Murphy Diesel is designed and built to increase your profit by cutting costs per board foot! Murphy's "true" diesel operation, with unit fuel injection and plain, open combustion chambers, gets more work out of every drop of fuel. Murphy's exclusive Hydraulic Servo-Type Governor assures instant response to load change. You get the lugging power you need to meet heavy-duty sawmill requirements. Murphy's rugged construction means freedom from down time to give you a higher daily average of board feet.

Your Murphy Diesel Dealer can show you the many other reasons why Murphys are preferred by lumbermen for dependable, low-cost operation. Call him today.

400L

### MORE WORKING POWER into the job

**In the complete Murphy Diesel MP Series Power Line-Up, you have your choice of engine types, sizes to meet every need...**

✓ For mechanical power: Murphy MP Diesel engines and power units from 105 to 320 HP.

✓ For electric power: Murphy MP Diesel "Packaged" Generator Sets from 60 to 188 KW.

✓ For both mechanical and electric power: Murphy MP Diesel Mech-Elec units.

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***SEE YOUR MURPHY DIESEL DEALER, TODAY—***

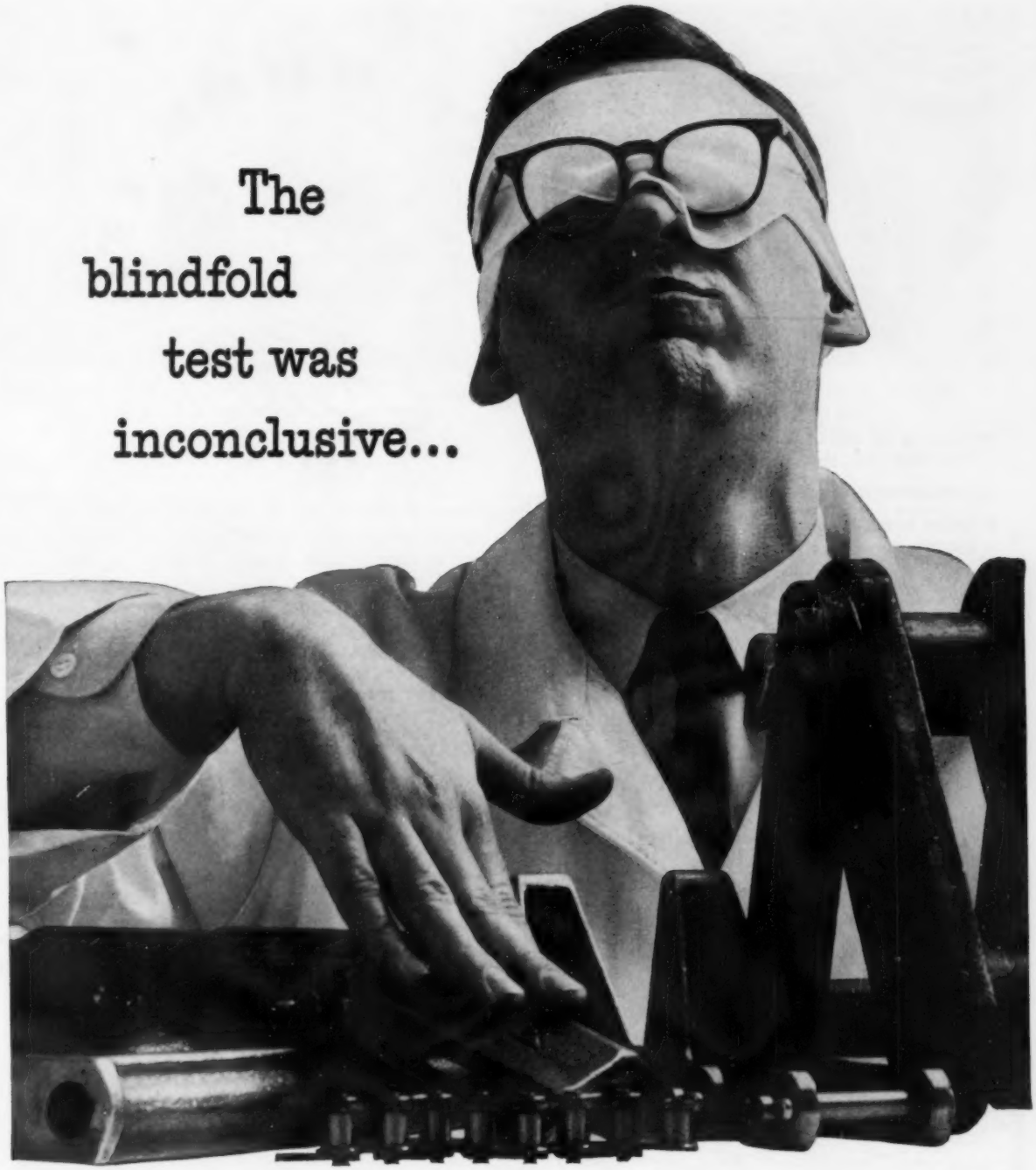
## MURPHY DIESEL COMPANY

**5351 W. Burnham St., Milwaukee, Wisconsin**

**SALES . . . PARTS . . . SERVICE**

**Throughout the Nation**

# The blindfold test was inconclusive...



Can you *feel* a "difference" in chains? In fact, can you *see* a difference? The only test that proves a difference is the *user test.*

Any user will tell you that Rex Chains, from log haul to finished lumber conveyor, will give you more years of *dependable service.* All we have to offer is unmatched quality. Ask your Rex Distributor or District Sales Engineer for the Rex Quality Story. CHAIN Belt Company, 4653 W. Greenfield Ave., Milwaukee 1, Wis. In Canada: write CHAIN Belt (Canada) Ltd., 1181 Sheppard Ave. East, Toronto.

REX®
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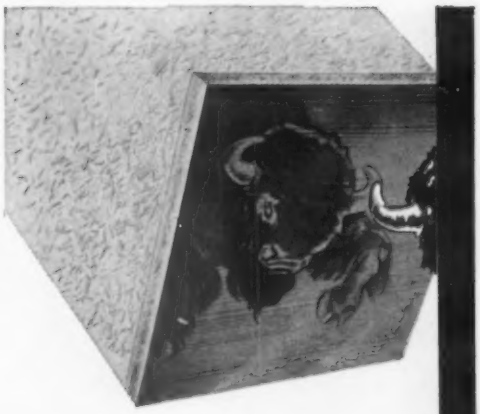
**REX IS BEST . . . IN THE USER TEST**



- **Producing the world's finest flakeboard even when using planing mill shavings**
- **Semi-automatic operation**
- **Lowest installation and production costs per daily ton**
- **Exclusive single opening press installation and versatile multiple-press installation**

In 35 Bison Board installations around the world today, successful tests on various types of raw materials have proved the Bison System capable of meeting most exacting requirements. New Bison System installations are now going into several sections of the nation—check with us for name of the one nearest you.

World-famous Bison Board offers many exclusive features worth your investigation—superior finishing and machining qualities inherent in its progressively graduated structure; lower finished product cost through savings in raw materials, as this is the only system that can produce a high quality board with 3500 M.O.R. when using 75% shavings.

Also investigate the exclusive glue mixing machine, lowering high cost for resins in making boards of high strength and screw-holding properties.

Every Bison System installation is test-run and proved before shipment, eliminating costly mistakes and start-ups. We can supply flakeboard *made from your own raw materials* run through a standard production plant in advance of order and without obligation. See us for details.

*Films and literature available. Call, wire or write:*

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## BOARDS IN USE

**CEDAR FLAKEBOARD** provides a striking and refreshing appearance in this wall paneling application.

*Long-Bell Division, International Paper Co.*

**WESTERN ATMOSPHERE** of game room is heightened by a feature wall of PV Brand Coppertone Square-tex. Coppertone Square-tex is a prefinished hardboard. Off-white wall and ceiling panels, overlaid with a free-form tracery of copper, come ready for use.

*Pacific Veneer and Plywood Division, Canadian Forest Products, Ltd.*

**DRY KILN DOOR** at Klamath Falls, Ore., plant of Weyerhaeuser Co. consists of hardboard panels set in a steel frame. A steel access door is mounted in the lower left panel. Some of the panels installed in 1955 are still in use.

**WELDWOOD PANIFLEX BIFOLD** units combine Novoply and a new hardware system to provide a bifold door which cuts in half the cost of conventional closet installations while saving both space and installation time. The doors are available in any width and in heights up to 10 feet.

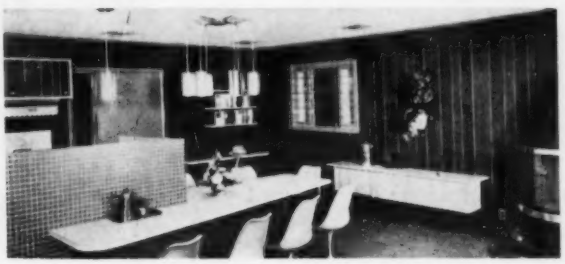
*United States Plywood Corp.*

**NEW FLUSH DOORS** out of old but still sound panel doors can be made by installing Duron hardboard.

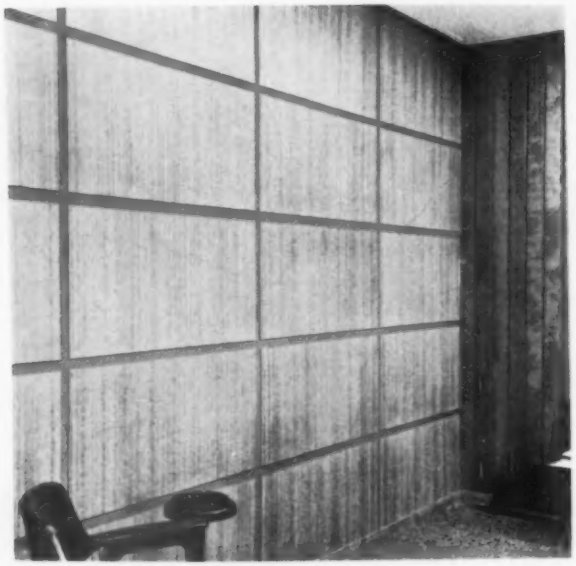
*United States Gypsum Co.*

**PANELOK SYSTEM** makes it possible to arrange everything on these walls . . . shelves, cabinet, desk, planter—within seconds without harming the surface.

*Masonite Corp.*



## BOARDS IN USE



**DECORATIVE TREATMENT** is achieved on Chicago office wall by cementing hardboard panels to a plaster wall. All-wood stribord panels, 42 inches wide and 18 inches deep, were given a base coat of rose beige, after which the high points of the pattern were highlighted with white applied with a roller. Intervening spaces between panels is also rose beige which matches closely with the natural birch paneling.

*Edward Hines Lumber Co.*

**DURON HARDBOARD** is quickly applied to close in corn crib. Many cribs were built with slotted side (left) so air could circulate to dry corn husks. Now that more and more corn is stored shelled, farmers are covering the slots to keep the dried corn from slipping out.

*United States Gypsum Co.*

**CEDAWOOD** flakeboard faced with walnut serves as sliding doors in the Jantzen International sales office in Portland, Ore. Cedawood was chosen due to its high sound absorption, sound transmission loss and non-warpage.

*Columbia Hardboard Co., Inc.*

**PINE FLAKEWOOD** installed on walls and counters of bowling alley in Seattle, Wash., provide modern appearing and functional panels. More than 7000 square feet was used.

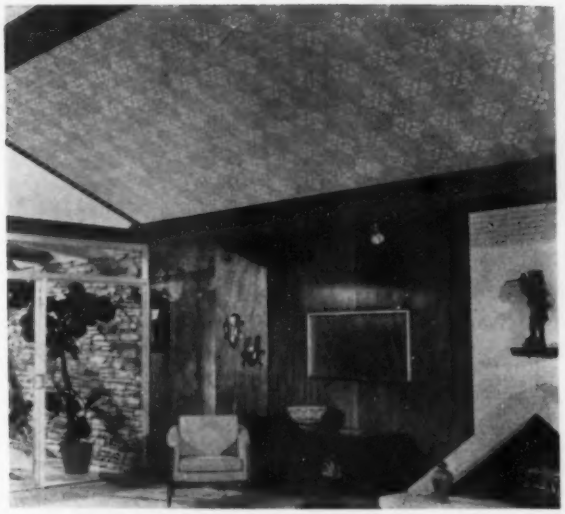
*Long-Bell Division, International Paper Co.*

**GRAINED BOARDS** installed with the Panelok system provide finish for this room. The Royalcote boards are available in seven decorator colors in factory-finished wood grains. Basic research in finishing techniques gives promise of added refinements in high fidelity reproduction of wood grains on boards.

*Masonite Corp.*

**NAIL-BASE SHEATHING** can be applied directly over wood shingles or asbestos cement shingles. Graylite XXX-N is made of northern wood fibers. It provides twice the insulating value of ½-inch mineral board. Asphalt treatment results in high moisture resistance, extra strength.

*Insulite*

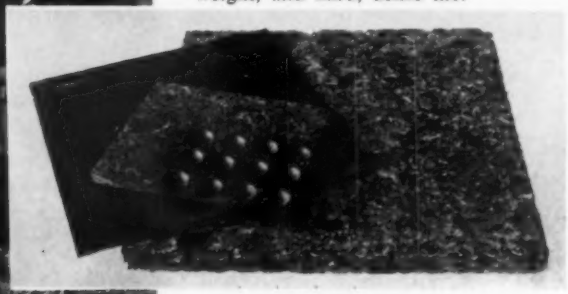


**CEILING TILE** with distinctive decorator designs and soft, pastel colors were designed specifically for home building and home remodeling. All tile are perforated with thousands of almost invisible pinholes for sound absorption. Up to 70% of sound striking the tile is absorbed.

*Kaiser Fir-Tex, Kaiser Gypsum Co., Inc.*

**PAR-TEX 3-D** grooved exterior particle board is shown here on a California apartment used for siding, railing trim and fence construction.

*Pacqua, Inc.*



**Researcher** Charles H. Burrows works at pile of chunks that will be made in board such as pictured below. These experimental boards include embossed pattern, board with holes longitudinally located to reduce weight, and hard, dense tile.

By CHARLES H. BURROWS,
Forest Products Research,
Oregon Forest Research Center,
Corvallis, Ore.

# Bark Board Requires Neither Glue nor Sizing

Bark now burned can be made into paneling, underlayment, or sheathing, according to results of research at the Oregon Forest Research Center in Corvallis.

Bark of Douglas fir or ponderosa pine can be made into boards simply by heat and pressure; the expensive binders needed for wood particle board are replaced by chemicals already in the bark of these trees.

Each year in Oregon alone, bark estimated at 2,400,000 tons is removed from saw logs and peeler blocks. About half this tonnage is used—mostly as fuel or mulch. The remaining 1,200,000 tons have caused much concern among utilization-minded members of industry; they realize this barky residue is a sizeable quantity of potentially valuable raw material. Although advances have been made, particularly in chemical utilization of bark, resulting discoveries and processes are not now effective in disposing of available tonnages.

Research has been underway for several years at the Oregon Forest Research Center to help solve this problem of unused bark. Objective of a recent study was to determine if Douglas fir bark could be utilized to make an acceptable board. During exploratory work, the discovery was made that bark board could be made without adding resin and size. This discovery was particularly appealing because additives are major factors in cost of particle board of wood. Two statistically designed experiments and a pilot-plant run provided necessary data to substantiate further the feasibility of bark-board manufacture.

Research discussed here was centered on a flat-pressed board, but experience gained while working with bark indicated that other kinds of products might be possible. For example, molded or extruded articles could be manufactured; bark has ability to flow under heat and pressure, a property desirable for such products.

**Manufacture.** Techniques for making a bark board are similar to those used in manufacturing board of wood particles. The general process of manufacturing is simple: Take mill-run slab bark, reduce it to particles in a hammer mill, dry and screen, then form and press into a board.

Some equipment required for manufacturing particle board of wood is not needed for bark board. Such items include blenders, tanks for storage of additives, and possibly sanders. A special press would be required to manufacture the bark board recommended; this press would be designed to permit rapid heating and cooling. Research findings have indicated desirability of producing a panel cooled in the press before being removed. Also, practical considerations in manufacturing and utilization indicate advantages for producing cooled panels.

**Properties.** Physical properties can be engineered. Among other factors, characteristics of the raw material, moisture content of the mat, and pressing conditions can be varied to tailor physical characteristics.

To illustrate potential range of properties, some data are presented (Table 1) from study of more than 300 boards made with the following variables:

| Variables | Levels | | |
|---|---|---|---|
| Moisture content of mat, % | 12 | 16 | 20 |
| Pressing pressure, *Psi* | 150 | 300 | 450 |
| Particle size, *Mesh** | –4+10 | –2+10 | –2+20 |
| Overlay | None | Fiber | Veneer |

* Minus indicates *through* the screen, plus indicates on the screen.

Other data can be summarized as follows: Press temperature, 280 F.: press cycle, 10 minutes hot with pressure, 5 minutes cooling without pressure: bark with air-dried: boards were 12 inches square and ⅜ inch thick.

## Estimated Daily Costs in Dollars for Manufacturing Wood Particle Board and Bark Board.

| Item | Unit cost Dollars | Wood particle board* | | Bark particle board* | |
|---|---|---|---|---|---|
| | | 0.65 specific gravity | 0.95 specific gravity | Fiber overlay, 0.95 specific gravity | No overlay, 0.95 specific gravity |
| Daily production** | | 48 M sq. ft. | 38 M sq.ft. | 38 M sq. ft. | 28 M sq. ft. |
| Raw material | | | | | |
| Particles: Wood | $10/ton | 492 | 578 | 400 | 400 |
| | $7/ton | | | | |
| Resin, 6% urea solids | $0.131/lb. | 773 | 909 | | |
| Size, 1.5% | $0.128/lb. | 189 | 221 | | |
| Kraft fiber | $9/cwt. | | | 137 | |
| Glue, urea*** | $0.05/lb. | | | 99 | |
| Conversion costs | | | | | |
| Steam | $1/1000 lb. | 105 | 126 | 192 | 192 |
| Electricity | | 97 | 115 | 115 | 115 |
| Oil | | 69 | 82 | 82 | 82 |
| Labor | | 450 | 450 | 450 | 450 |
| Indirect costs | | 495 | 495 | 495 | 495 |
| Total daily cost | | 2670 | 2976 | 1970 | 1734 |
| Cost/M sq. ft. | | $56 | $78 | $52 | $46 |

* All boards are assumed to be one-half inch in thickness, for ease in estimating.
** Based on 3 shifts, 250-day year, and 12-opening press.
*** Glue spread at rate of 26 pounds to a thousand square feet of single glue line.

Table 1. Physical Properties of Bark Board, Taken from a Statistical Study.

| Test | Test values Range |
|---|---|
| Water absorption, % | 2.0–14.1 |
| Thickness swelling, % | 1.3–13.6 |
| Linear expansion, % | 0.04–0.99 |
| Modulus of rupture, *Psi* | 462–8057 |
| Modulus of elasticity, *M psi* | 74–1676 |
| Nail-head pull-through, *Lb* | 55-207 |
| Screw withdrawal, *Lb* | 138–318 |
| Internal bond, *Psi* | 35–206 |
| Specific gravity | 0.65–1.09 |

**Potential.** Many of the uses visualized for this product are common to particle board of wood, to hardboard, and to plywood. For example, sheathing, underlayment, core, paneling, and insulation appear practical. Exceptional resistance of bark board to entry of water may suggest special applications. Most promising product, because of its versatility, is a board overlaid with kraft fiber. Such a product has strength adequate for most applications, is pleasing in appearance, and can be handled or worked satisfactorily. The fiber sheet overlayment can be added to the bark mat and pressed with it.

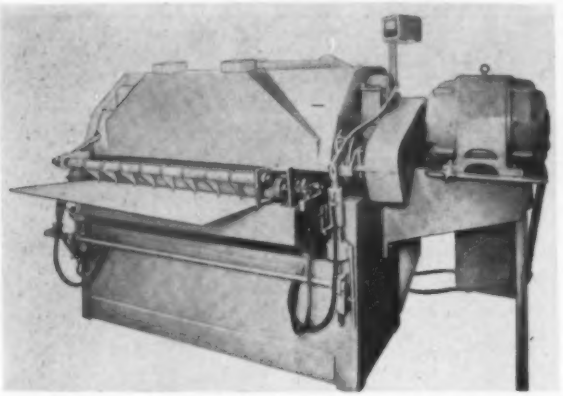
Economic feasibility of producing and marketing bark board can be considered as a balance between certain costs. Comparison of some costs for bark board with costs of wood particle board illustrate this.

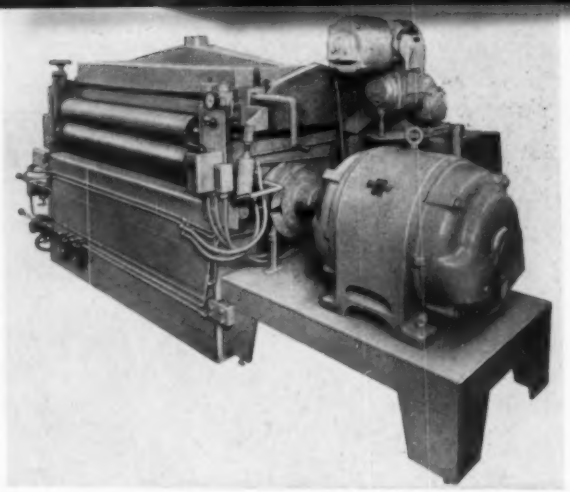
For bark board, added cost of a special press, plus increased freight cost, is ameliorated by greatly reduced cost of manufacturing. Capital cost of the special press for making bark board is estimated to be 50 to 80% higher than cost of conventional presses for particle board. Expense of shipping will be about 46% more for bark board than for wood particle board, because of the difference in density. Manufacturing costs, conversely, will be lower for bark board than for wood particle board, mainly because of elimination of costs for resin and wax. Estimated costs of manufacturing are shown in the table on this page.

**Conclusions.** Based on findings of this research, certain conclusions may be advanced:

- A bark board satisfactory for various uses can be made without additives.
- Physical properties can be tailored to meet various end-uses.
- Most promising and versatile product is a board overlaid with sheets of kraft fiber.
- Based on research and practical considerations, panels should be cooled in the press prior to removal.
- Cost figures indicate that bark board can be manufactured economically. ■■

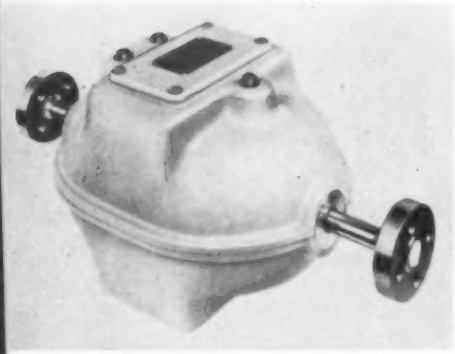
# NEW BOARD EQUIPMENT





**SPEEDBELT SANDERS** are available in Model TOP 50 heavy duty (left), and the Model SPL (right), a bottom sander which is usually run in tandem with the TOP model where sanding is required on both sides of the stock. On the job, these machines remove about .32 inches on each side and size to within plus-minus .005 on particle board. Feed speeds on particle board with tandem operation for both sides are 50 to 100 feet per minute. The machines take insulation board at a rate exceeding 200 feet per minute. The machines are built in widths of 24, 40, 50 and 62 inches. Now being developed are machines with a 75-inch wide top and bottom sander in a single unit. These machines will also be available in 50-inch widths.

***Manufacturer: Timesaver Sanders, Box 7446, Robbindale Station, Minneapolis 22, Minn.***

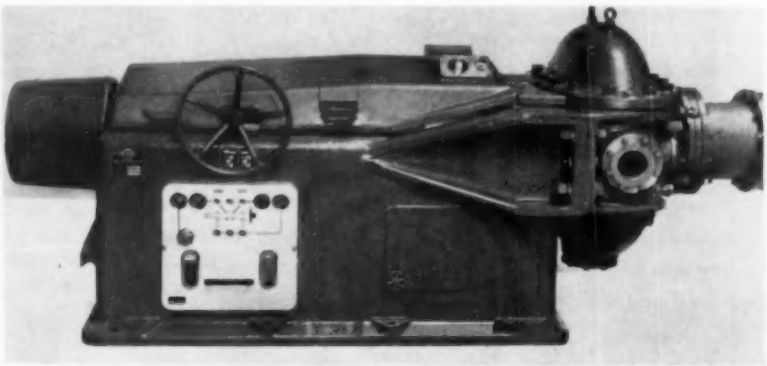


**MAGNETIC FLOW METER** controls resin-to-chip ratios in particle board manufacture. In one of the various arrangements possible, wood chips are weighed and fed to mixer by a Merrick continuous belt conveyor weight scale. A pneumatic signal, proportional to chip weight, is produced and sent to an electronic ratio controller. Resin, as it is pumped from storage to be sprayed into the chips in the mixer, is measured by the magnetic flow meter. This measurement, an electrical signal proportional to the resin flow rate, is also received by the electronic ratio controller. The latter records both chip weight and resin flow, and through a ratio control mechanism automatically varies the speed of the resin pump to maintain the desired ratio of resin to chips.

***Manufacturer: The Foxboro Co., Foxboro, Mass.***

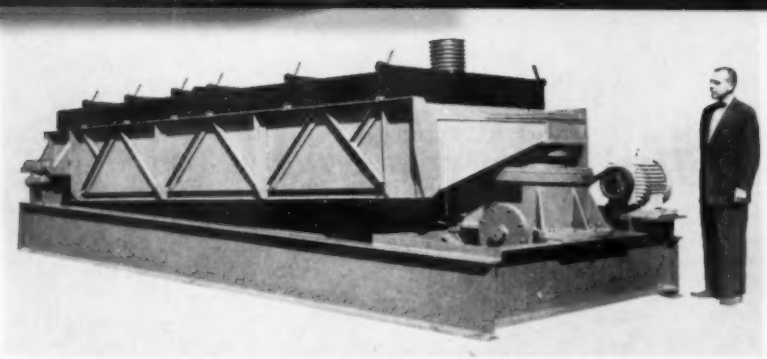
**DEFIBRATOR** operating with steam pressure of 180 psi will produce wood fiber for hardboard and insulation board at a rate of 60 tons per day. Chips are fed into the unit by either a screw feeder or rotary feeder. The defibrator has two 36-inch discs, one rotary and one stationary, with replaceable segments. Grinding pressure is regulated from a control panel through a hydraulic oil pressure system with safety controls.

***Manufacturer: American Defibrator, Inc., 405 Lexington Avenue, New York City 17, N. Y.***



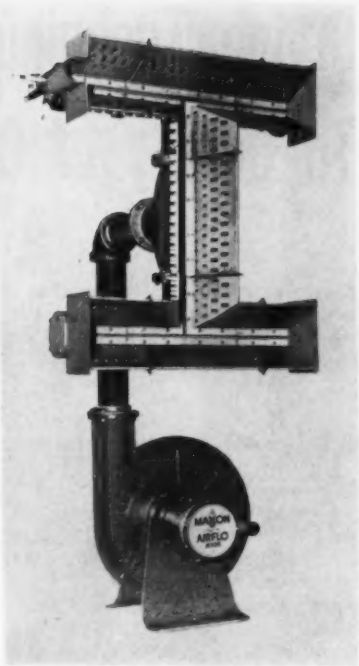
**SOULE STEEL BUILDING** housing new Collins Pine Co. chipboard plant at Chester, Calif., consists of two sections with a total area of 46,000 square feet. The buildings are clear span, providing ample space for placement of equipment.

***Manufacturer: Soule Steel Co., 1750 Army Street, San Francisco 25, Calif.***



**ROTEX SCREENER** Model 73 has three screen surfaces, each with 80 square feet of screen area. Dust-tight construction reduces fire hazards and simplifies housekeeping. Screen box of Model 73 is moved with a horizontal gyratory motion which prevents up-ending of elongated pieces, assures clean, accurate separation. Bouncing rubber balls beneath each screen surface prevent screen blinding.

*Manufacturer: The Orville Simpson Co., 1230 Knowlton St., Cincinnati 23, Ohio.*

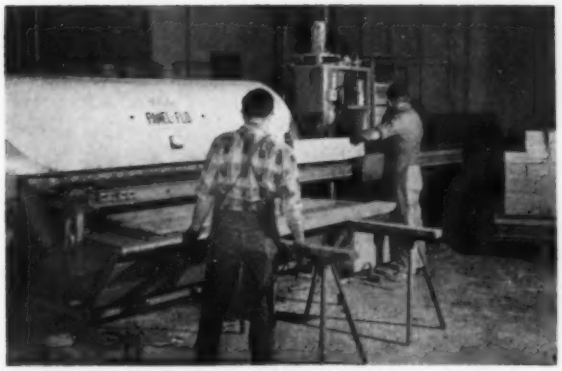


**AIRFLO GAS BURNER** systems, with a 25-to-1 throttling range, provide extreme flexibility of temperature and loads for industry drying, baking or curing. Airflo may be used on either re-circulating or single-flow systems. The Airflo line burner with its stainless steel mixing plates mounts directly in the duct carrying the stream of air to be heated. The mixer unit delivers carefully proportioned air-gas mixture to the line burner inside the duct.

*Manufacturer: Maxon Premix Burner Co., 201 East 18th Street, Muncie, Ind.*

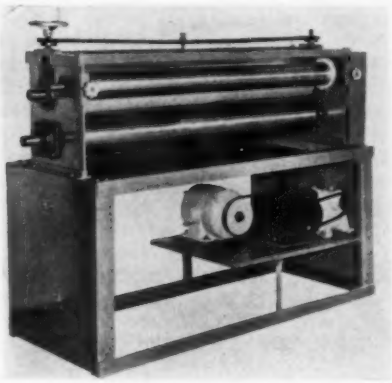
**MATTHEWS MARKING DEVICE** applies an "A-A" label on Versabord floor underlayment leaving Weyerhaeuser Co.'s plant at Coos Bay, Ore. The mark assures the user there are A grade faces on both sides of the panel.

*Manufacturer: James H. Matthews & Co., 3962 Forbes Avenue, Pittsburgh, Pa.*



**TAYLOR PANEL-FLO** press at U. S. Plywood Corp. Novoply plant in Anderson, Calif., is used for edge gluing of trim and gluing lumber and veneer bands on door panels. It is a steam-heated, continuous flow machine.

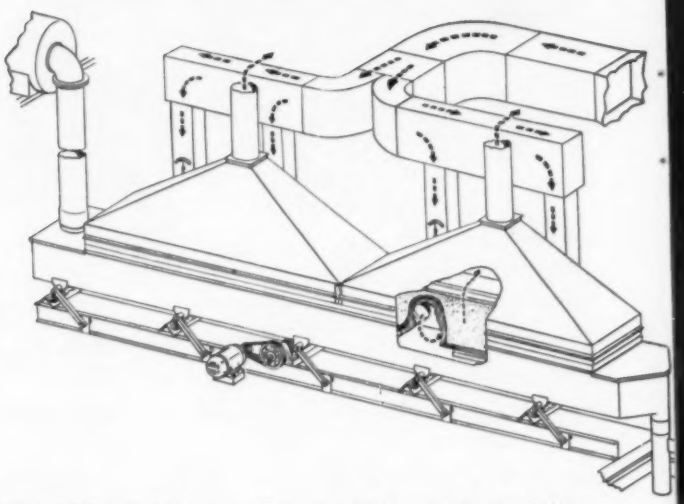
*Manufacturer: James L. Taylor Manufacturing Co., 108 Parker Ave., Poughkeepsie, N. Y.*



**WALCO ROLLER COATER** is available in two units, the heavy duty roller coater with 6-inch rolls, and the combination roller coater and reverse coated, together with companion graining machines. They are available in widths from 12 to 72 inches, single top, single bottom and two models for coating one or both sides.

*Manufacturer: L. R. Wallace & Co., 172 N. Vernon Ave., Pasadena, Calif.*

# Drying Technique Key To Quality of Chips



**Dreyerveyor dryer** was designed to handle material gently and to retain material to be dried in the drying 100% of the time. It can be zone-controlled and utilizes relatively low temperature heat.

By L. H. KAESER, Engineer, Portland, Ore.

Care and effort are being put forward to get quality chips. The right size and thickness produces characteristic designs on the top surface of the board. A great deal of care is being taken to manufacture a fine flake. Therefore, much consideration must be given to a dryer that does not create dust, will not destroy the flake.

Until recently there have been three types of dryers available for drying chips or other wood particles. These are: The rotary dryer, the flash type dryer and the tray type dryer. All of these dryers utilize a relatively high temperature heat source that is applied at one point but which is governed by the exit temperature.

**Rotary dryer** conveys chips by a series of flights which act like a helix. The material is lifted and dropped through the hot air stream issuing from the burner end to the discharge of the rotary dryer. The material actually is in contact with the heating medium half the time. The other half of the time it is being carried up the side of the drum and tumbled. This tumbling action results in some drying by conduction, but it also results in a creation of dust and breaking up of particles.

**Tray type dryer** is the same except material is dropped down from one tray to the next tray below and as it drops, it again passes through the heating medium. Degree of dryness is determined by retention time in the kiln and the temperature applied. As previously noted, the temperature is controlled by the exit gases which have very little relation to the material entering the point where the heat is applied.

**In flash type dryers** the material is injected and conveyed in a hot air stream. The theory is that the heavier particles will not travel as fast as the lighter particles and therefore gravity alone will classify the material as to wetness or dryness. This concept does not take into consideration the effect of the cross sectional area of the particle. The light and relatively large thin flakes can travel at a lower rate in the air stream than the smaller more compact and heavier particles. Again, in the flash dryer the temperature is controlled by the exit gases.

**A fourth type, the "Dreyerveyor"** has been developed by The Carrier Conveyor Corp., division of Chain Belt following extensive laboratory tests in drying wood particles, wood flakes and wood chips.

For the past ten years these dryers have been used successfully in the drug, food and tobacco industries. Light fine crystal pharmaceutical powder is conveyed and dried gently in order not to destroy the crystals. The material has to be dried without overheating because overheating results in fusing and discoloration. The drying is carried down to .25% dry basis.

Essentially, the Dreyerveyor is a spring weight system. The action of the conveying is that of a semi-circular motion. In other words, the tray goes up and down, but before the tray reaches the top of its stroke the material leaves the tray and does not touch the tray until the tray almost reaches the end of its down stroke.

The natural frequency conveyor has a perforated deck above the bottom of the tray. Hot air is forced through the side openings and passes up through the screen and the material to be dried. From the material it may be exhausted or recirculated back through the system.

As the flakes or chips are conveyed along they are aerated. The air passes vertically up through the material to dry it. You can readily visualize that if the material is conveyed across a vertically moving screen, it is in contact with the drying medium 100% of the time. Counter-flow air currents may be set up with the material being dried. This is a decided improvement in drying.

Because of the convenience of piping the air underneath the load, it is also convenient to block off these underneath passages in sections and thus have various zones of heat control for various dryness of material. Also, because of the various sizes of material, the fact that low temperatures can be used results in more even drying. The exhaust temperature is not used to control the inlet temperature. Each temperature in each zone can be controlled independently and it is possible to have as many zones as is desired. Cost usually limits the number.

Temperatures considered for drying are between 200 and 400°F. Steam or gas fired air heaters are used. At all times the drying medium is in intimate contact with the material to be dried. Very high heat transfer coefficients are possible. This results in a very efficient operation.

Units considered are as wide as 5 feet with 3 to 4-inch mat depth for the material. Conveying speeds have been approximately 15 FPM and the face velocity of the screen deck has been 200 to 300 FPM, depending upon the nature or density and size of the material. Capacities of 4 to 7 TPH wet basis are possible, depending on the density of the material. The Dreyerveyor is essentially a constant feed machine and once its maximum drying rate is determined, there is little that can be done to the capacity to increase it except to add more conveyor.

Since the length determines the retention time, the units can be cut in half, one feeding in one direction and coming back in the opposite direction. It is also possible for these types of units to screen as well as dry in conveying.

Consideration is given to the effect of eliminating the amount of dust created, protecting the type of flake or chip desired. ■■

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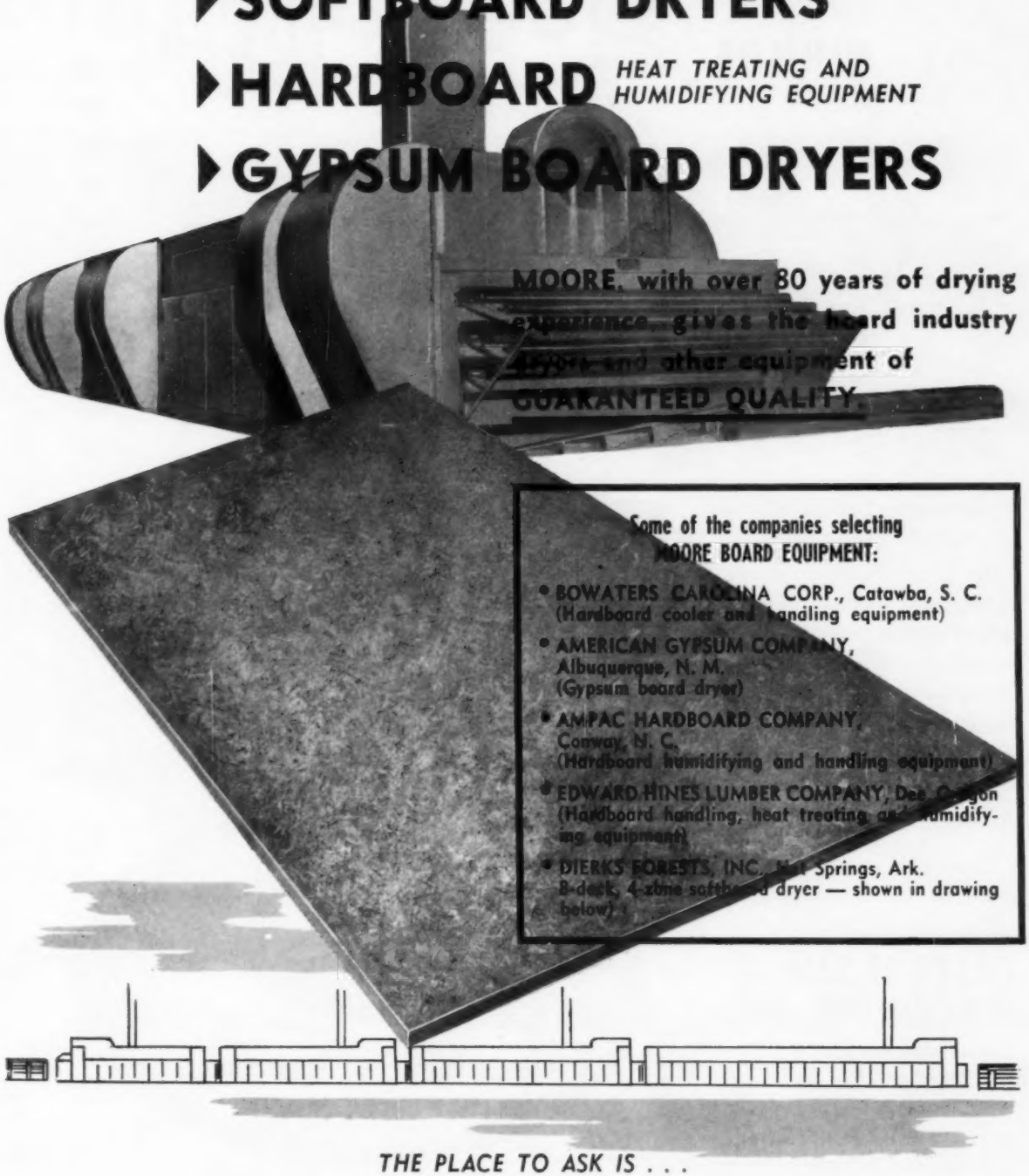

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- **EDWARD HINES LUMBER COMPANY, Dee, Oregon** (Hardboard handling, heat treating and humidifying equipment)
- **DIERKS FORESTS, INC., Hot Springs, Ark.** 8-deck, 4-zone softboard dryer — shown in drawing below)

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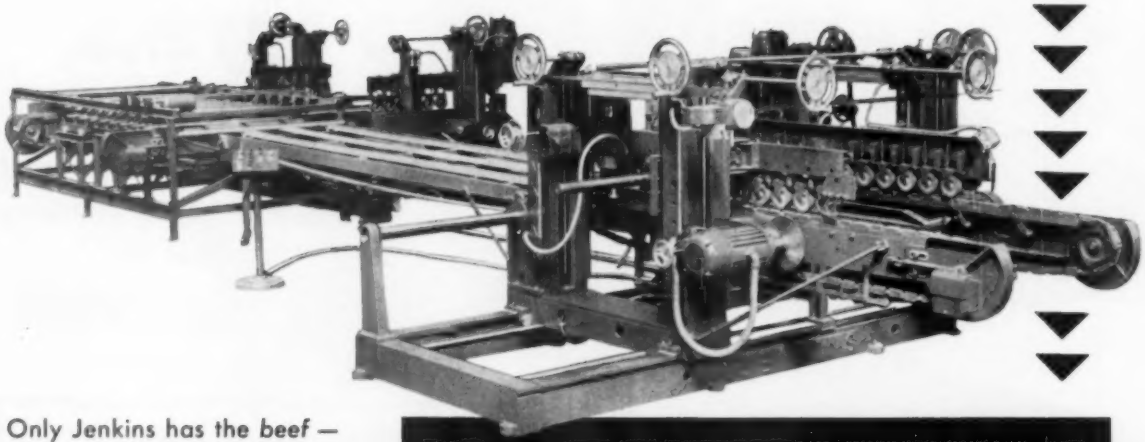

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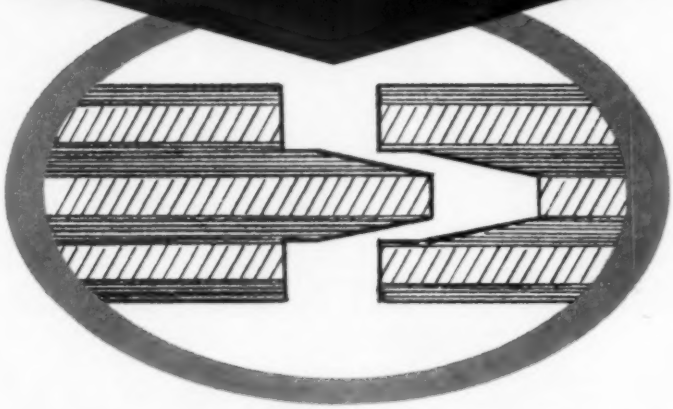

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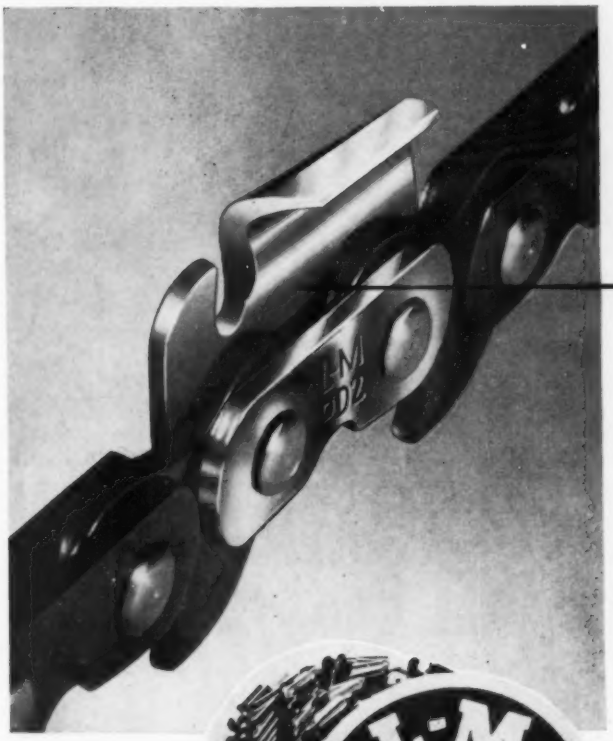

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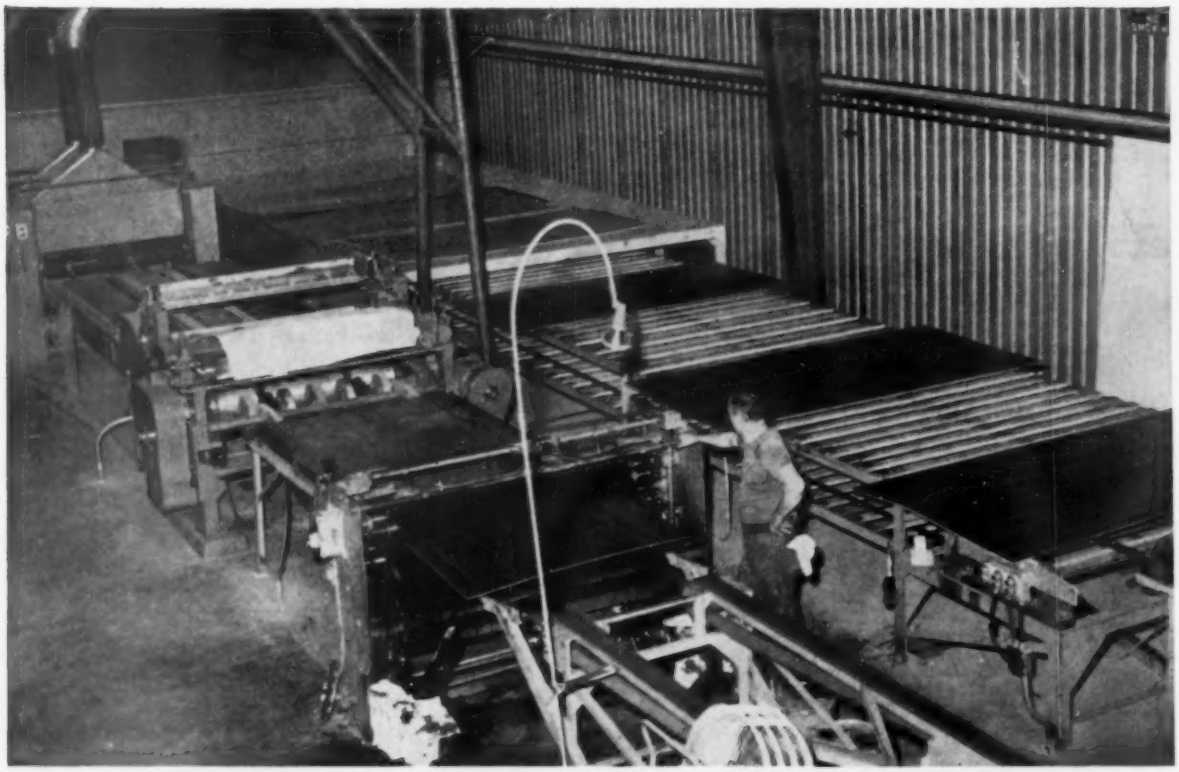

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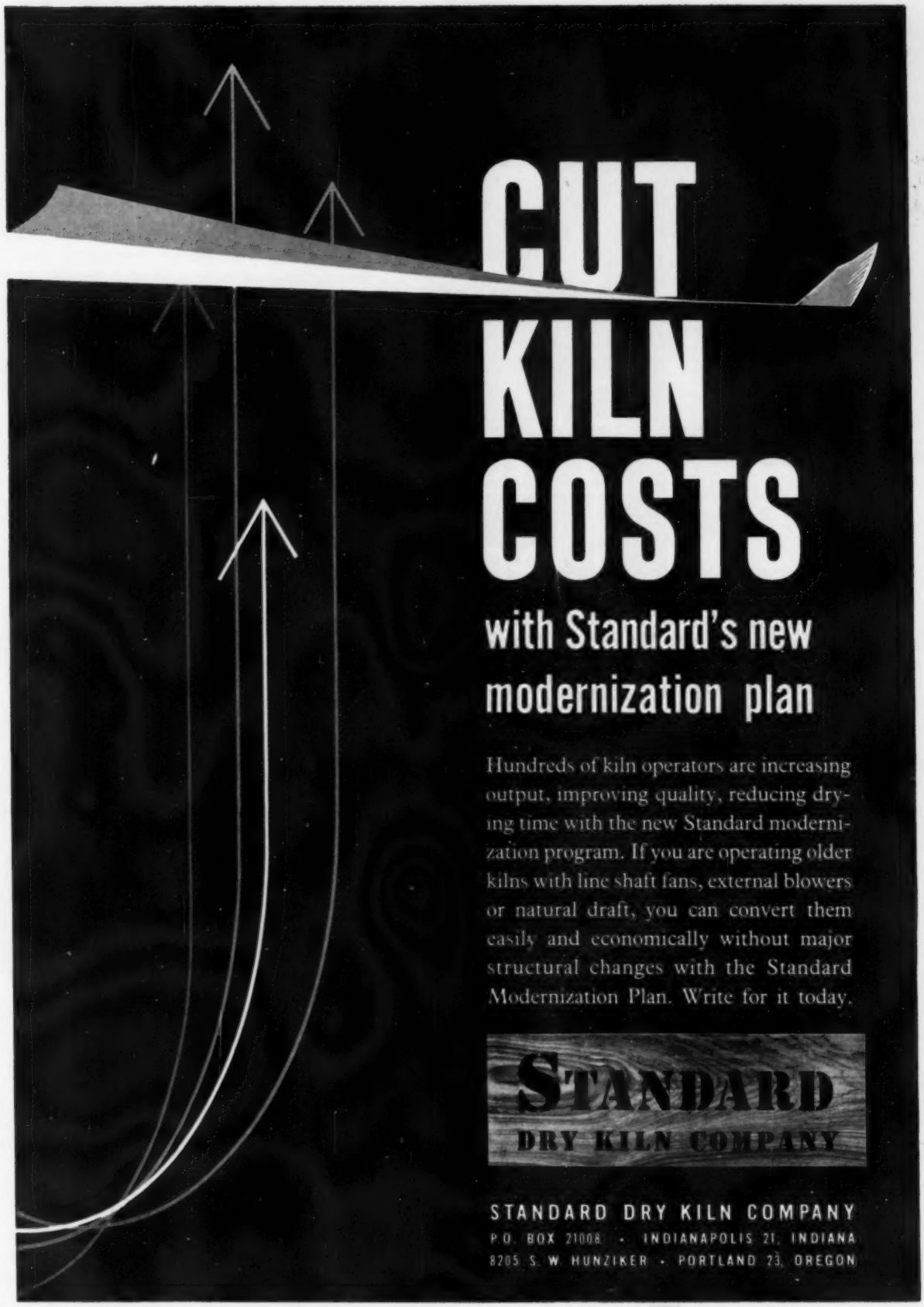
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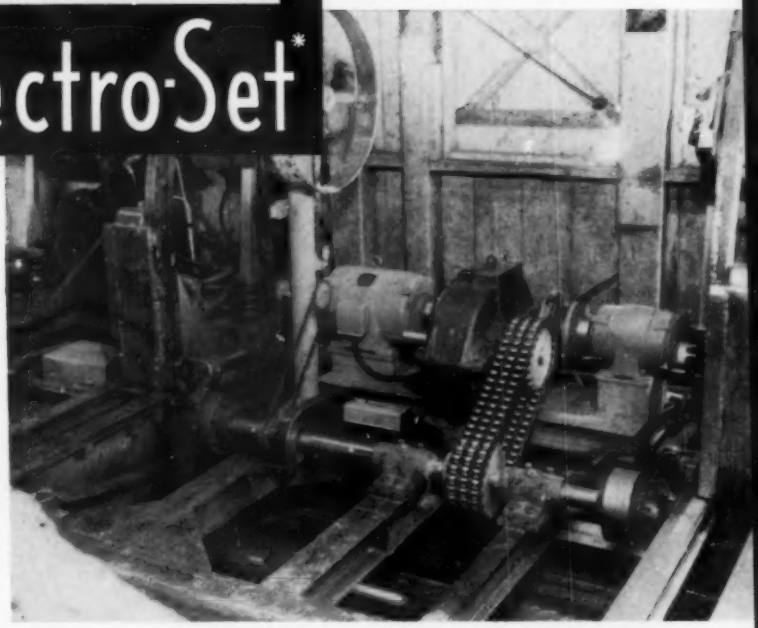

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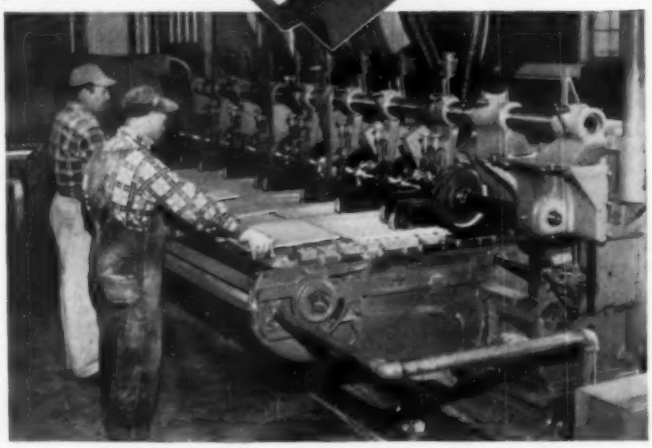

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# Glue Makers Tackle Adhesive Problems

**Technical Committee** of the West Coast Adhesive Manufacturers consists of, from left: F. H. McKibben, Chemical Process Co.; R. G. Peterson, Balfour-Guthrie, Ltd.; J. M. Hine, Borden Chemical Co.; G. E. Brown, Monsanto Chemical Co.; R. K. Stensrud, Reichhold Chemicals, Inc.; K. A. Binder, American-Marietta Co.

The Technical Committee, West Coast Adhesive Manufacturers, as it now exists, was formed in 1952. Previously, however, an informal technical committee of representatives from West Coast adhesive manufacturers had been functioning for some seven or eight years. The first committee convened at irregular intervals and gave most of its serious consideration to problems concerning the Douglas fir plywood industry in the Pacific Northwest.

Since becoming a formally organized group which meets regularly, the committee has broadened its activities to include other industries served by the West Coast adhesive manufacturers. Useful contributions have been made in fields such as standardization of test methods, and those involving technical problems common both to the adhesive and resin companies and the basic industries which they supply.

The committee is interested in the industry-wide problems of companies which supply industrial products such as plywood, paper, particle board, hardboard, mineral wool insulation, laminated beams, and other products which involve the use of synthetic resins or adhesives in their manufacture.

Membership in the WCAM Committee is limited to one official representative from each company. Membership on the committee is open to top technical representatives from other companies if they so desire, with the understanding that the company representative will maintain an active part in committee functions.

**Initial projects** of the committee came from plywood manufacturers. For example, one of the largest projects undertaken consisted of developing improved methods of evaluating resin adhesives of the exterior type, with a view toward gaining DFPA approval and acceptance for industry use.

This study involved more than two years' effort by committee members and their companies. Later, the committee developed a number of standardized test methods, now in use by all manufacturers on the West Coast, for determining the physical constants of liquid resin syrups. These constants include measurement of viscosity, determination of non-volatile content of liquid urea-formaldehyde resins, liquid phenolic resins, percent total solids of liquid phenolic resins, determination of specific gravity of liquid resins by two methods, and methods for measuring of the pH of liquid resin syrups in both high pH and low pH ranges.

The development of a test method, entitled, "The Measurement of Internal Bond Strength of Composite Wood Boards" was of particular interest to the board industry.

**Efforts of the committee** have resulted in the Douglas Fir Plywood Association directive allowing the use of up to 10% proteinaceous or amylaceous materials as extenders in exterior resin adhesives when based on the resin solids content of the glue mix. More recently, the committee has been successful in helping to formulate an official DFPA policy which will simplify the method of gaining approval, for industry use, of extenders for exterior type resin glues.

This new policy will directly result in a considerable saving of time and money spent by the adhesive manufacturers, the DFPA, and the plywood manufacturers in gaining acceptance of a new extender throughout the industry.

Frequently, reports have been presented under the auspices of the committee which deal with some aspect or problem confronting one of the industries which the adhesive manufacturers serve.

Areas in the board field which offer opportunities for the WCAM Committee include cooperative efforts with manufacturers and trade associations to establish unified, acceptable test procedures for the evaluation of board product and synthetic resin performance. For example, suggestions have been made to the Committee regarding standardization of testing for exterior durability of hardboard and particle board. Further, the Committee welcomes suggestions for projects which in fact have potential benefits for the entire industry. ■■

# Monsanto Reports Advances In Phenolic Resin Binders

By A. L. BONUTTO, Sales Manager, Western Adhesives, Monsanto Chemical Co., Plastics Div., Seattle, Wash.

In order to help hardboard and particle board manufacturers increase their markets and decrease their costs, Monsanto Chemical Co. in continuing a vigorous program of market research and technical research. In an effort to enable particle board manufacturers to market a more versatile product. Monsanto initiated, and has been instrumental in promoting, the use of phenolic resins for particle board binders.

In 1959, particle board manufacturers attended a seminar sponsored

*(Continued on next page)*

by Monsanto, during which phenolic resin binders were discussed. Details covering manufacturing conditions and resultant board properties were studied.

One of the goals of the particle board industry has been an increase in the scope of their market. The durability of a phenolic bound board will help reach this goal. Beyond that, Monsanto's laboratory and field research has been aimed at the development of an insect-resistant (termite) and fireproof board. The assessment of potential new markets is being helped by end-use studies which are now in progress under the guidance of Monsanto's product and development groups. All of these approaches will aid in expanding markets, obtaining approval of government agencies, and developing new and approved binders for the industry.

**Superior phenolic resins** with a lower cost, Monsanto's "M" series, were developed in 1959 as a result of a new technology and introduced to the industry. These resins are in commercial use and tests on plant-manufactured boards demonstrate excellent accelerated aging properties. PF875M, PF890M and PF891M are our current phenolic binders for particle board.

Monsanto's UF115, a urea resin particle board binder, and its various modifications, were tailored to achieve optimum performance for each particular mill process.

For both hardboard and particle board producers, our continuing aim is to design resin binders which will increase efficiency, raise performance/cost ratios, and improve board properties. Specifically, these aims are directed toward more production through faster curing resins, improved dimensional stability, improved internal bond and screw-holding properties, and more efficient resins.

**Future trends.** The composition board industry continues to surge as 100% utilization becomes more and more prevalent and the consumer markets are expanded for new products. It seems apparent to us that the primary problems of the future revolve around dimensional stability and the use of resins or additives that will significantly improve this property. Furthermore, it is believed that the coming years will see the advent of more and more of the prefinished surface composition board. Much of our current and proposed research is along this line—to develop resins and techniques that will improve dimensional stability and surface properties. ■■

# High Quality, Low Cost Binder Is Industry's Biggest Need

**By R. T. HANSON, General Manager, Western Operations, Borden Chemical Co., Seattle, Wash.**

Borden Chemical Co.'s activities in composition board during the past year have been concentrated in two main directions.

1. Continued fundamental studies on improving the durability of particle board. These studies are 4-fold:

- Upgrading of urea resin with additives and fundamental urea resin chemistry.
- Use of phenolic resins.
- Use of other resin types.
- Stabilization of the wood particles themselves.

2. Development and modification of existing products tailored for individual plants and processes.

- In the second case, laboratory work has made improvements in duplicating plant processes and effects on small scale, permitting better developments efforts for specific plants. Needs and requirements of the particle board manufacturer have been carefully studied to direct development work in a manner more useful to his needs. These efforts have provided substantial improvements and new products in particle board, flakeboard, dry and wet process hardboard and semi-dry process hardboard.

**Demand continues** for more durable, better, low cost binder for all composition board products. Progress so far has been evolutionary rather than revolutions. Unless very low cost binders can be developed, which will permit use of large quantities, some inexpensive methods of wood stabilization is needed to improve dimensional stability of boards, both medium and high density. It is felt that this is presently one of the biggest deterrences to the use of boards in many applications.

**Auto-Set 31** has been a revolutionary break-through in the development work to secure an improved urea resin for particleboard. It has had good acceptance. It has proved to Borden that substantial improvements in this field are possible, and prompted the company to expand its efforts in this field.

With the quantity and quality of research effort being spent on these products, we are certain that many of the problems now standing in the way of their growth will be solved and a rapidly increasing amount of composition board will go into core material, underlayments, structural use and the innumerable industrial uses. ■■

# Chemical Process Co. Pushes Research in Less Costly Resin

**By D. S. CATTERSON, Adhesive Division Manager, Chemical Process Co., Redwood City, Calif.**

The addition of five new research laboratories is nearing completion at the company's Redwood City, Calif., headquarters. This expansion, along with recent additions to the plant production equipment, will help meet the requirements of the board industry during the coming years. With the completion of the new facilities, Chemical Process Co. will emphasize and expand its research program designed to develop improved resin formulations and application techniques for the board industry.

Although this industry has, in the past, been characterized by its outstanding growth, the era of easy growth is coming to an end. It is becoming increasingly clear that the future expansion will depend to a great degree on

*(Continued on next page)*

DIAMOND LUMBER CO. reports...

"We Sand and Polish 14 Door Skins per Minute!"*

TIMESAVER® SPEEDBELT SANDERS

There's a TIMESAVER Sander for every job!

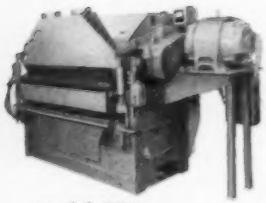
*That's the amazing production report made by E. R. Knokey, General Mgr., Plywood Div. of the Diamond Lumber Co., Tillamook, Oregon. Here's the story:

*"The line of Timesaver Model TOP Speedbelt Sanders that we have installed are used primarily for sanding door skins. The skins are mostly 3 ply plywood made from Rotary Phillipine Lauan and range in size from 18" to 48" in width and from 72" to 82" in length. We sand and polish approx. 14 door skins per min. and do an excellent job."*

When not running door skins, Diamond Lumber uses the Timesaver line to sand hardwood plywood panels which are normally ¼" to ¾" thick and 4x8 ft. in size. Woods in this category are Mahogany, Walnut, Cedar, Ash and various other hardwood species. Results on these materials are also excellent.

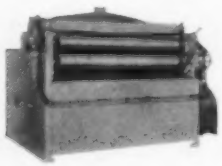
Other manufacturers such as *Anacortes Veneer, Inc.* and *Aberdeen Plywood and Veneers, Inc.* are also using Timesaver "Speedbelt" Sanders in their finishing operations. These are only a few of the many Timesaver installations where manufacturers are achieving savings in labor and materials while producing the desired top quality finishes. Whether your production requirements call for a single machine or a series set-up, you, too can enjoy the advantages of wide abrasive belt sanding at a minimum cost.

*Write Today . . . get the facts and the figures on how the amazing Timesaver "Speedbelt" Sander can do your job . . . better and at less cost.*



**Model TOP**

Available in belt widths of 24", 36", 50" and 54". Sanding action is overhead.



**Model SPL**

Available in belt widths of 24", 36" and 50". Sanding action is for underside of work.

Pioneers in Wide Belt Sanding for the Woodworking Industry

TIMESAVER SANDERS

Dept. E-6 Box 7446 • Robbinsdale Station • Minneapolis 22, Minn.

improved durability and greater adaptability or versatility of the final product. These product requisites dictate the direction of the research program being carried out by Chemical Process Co. The year 1960, our 24th consecutive year working with polymerized resins, holds many bright promises for the future.

**One major research project** now underway is directed toward the development of a resin that will produce a board of physical properties close to those of the standard phenolic boards, yet intermediate in cost between the phenolic and urea resins. While urea resins currently enjoy a sizeable cost advantage over all others and urea-produced boards have gained a large share of the total board market, the continued growth of this market will be greatly handicapped by the inherent lack of temperature and moisture resistance of urea boards. Our approach to improved board durability is through the study of individual particle movement within the board under varying conditions of temperature and moisture. As this program yields the anticipated information, it will result in a resin of intermediate cost yielding a board of greatly improved physical characteristics. This will fill a large gap in the board industry and should do much toward opening new markets.

**Improved surface** on the finished board is also being studied. A smoother, more uniform surface tailored for improved paint reception will materially improve the marketability of the finished board.

These projects, along with the others under study, all lead to a greater understanding of the many variables encountered in board production. The basic study of these variables separately and with their inter-relationships as effecting board production will be of real value to this young, dynamic, growing industry. ■■

## $200,000 Chipping Plant Planned In Montana

An increased production at Waldorf-Hoerner Paper Products Co., Missoula, and a willingness of woodlot owners to supply chippable material, has prompted the paper firm to build a chipping plant at Trout Creek.

A plant capable of handling about 100 cords a day is planned. It would take any size log, down to four inches in diameter, in lengths from 8 to 32 feet.

It is expected that the Green Mountain Soil Conservation District, which has been active in developing a chipping installation for the area, will provide a manager for the operations.

THE LUMBERMAN'S 1960 DIRECTORY OF

# Board Producers

- Hardboard
- Flakeboard
- Particleboard
- Insulating Board

## HARDBOARD

**ABITIBI CORP.**
Home Address: Penobscot Building, Detroit, Mich.
Plant Address: Alpena, Mich.
Personnel: D. W. Ambridge, pres.; C. H. Rosier, vice pres. & gen. mgr.; E. J. Schultz, vice pres.-sales; O. B. Eustis, mill mgr.; R. E. Paul, tech. dir.; W. C. E. Wood, plant engr.
Production: (Rated Annual Capacity) 200,000,000 sq. ft. 1/8" and 1/2" basis.
1959 Production: 175,000,000 sq. ft.
Rated Capacity: 250 tons daily.
Process: Wet process S-1-S, wet-dry process S-2-S.
Panel Sizes: Up to 4'x16'.
Thicknesses: 1/2 to 5/16 inches.
Spec. Gravity: .85 to 1.15.
Colors: Woodgrain.
Raw Material Used: Northern hardwoods and softwoods.
Volume (from logs): 75,000 tons.
Specialty Items: Overlayment; tongue & groove; tempering; prefinish; perforated; contour edge.
Trade Names: Plateboard (R).
Percent of Product for own Use: None.

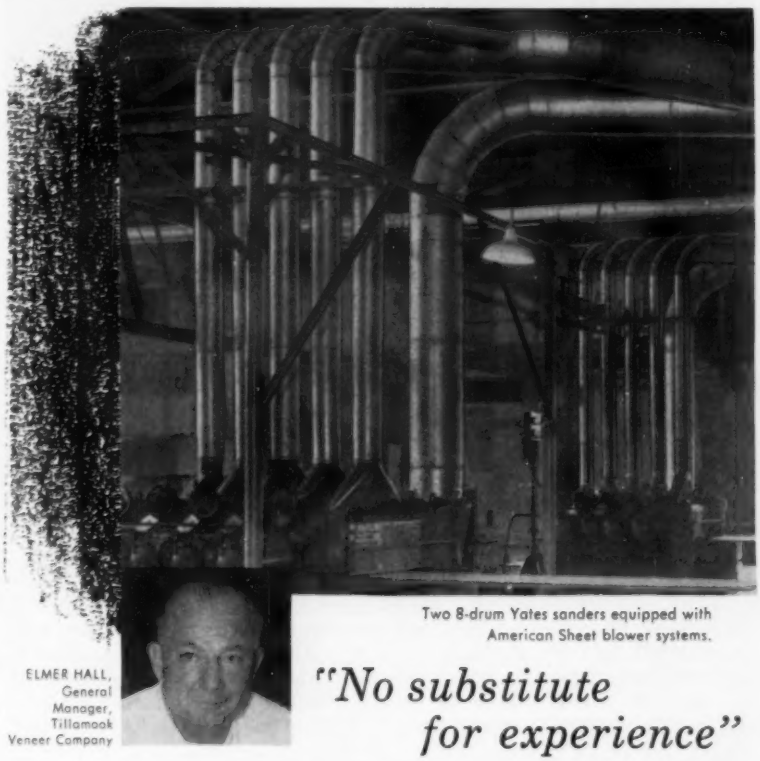
**ABITIBI POWER & PAPER CO. LTD.**
Home Address: 408 University Ave., Toronto, Ontario, Canada.
Plant Address: Sturgeon Falls, Ontario, Canada.
Personnel: D. W. Ambridge, pres.; R. E. Costello, gen. mgr., Panelboard Div.; E. G. Heslop, mill mgr.; W. T. Gauthier, supt.; A. W. Gray, gen. sls. mgr.; D. L. Amos, control supt.; P. M. Rebin, plant engr.
Production: (Rated Annual Capacity) 61,600,000 sq. ft. 1/8 inch basis.
Process: Wet S1S.
Panel Sizes: All standard sizes.
Thicknesses: 1/10", 1/8", 1/4".
Spec. Gravity: 0.88 - 1.02.
Colors: Natural and woodgrains.
Raw Material Used: Wood Pulp and sawmill chips.
Uses: Industrial and building; underlayment; decorative specialties.
Specialty Items: Tempering; decorative

**AMPAC HARDBOARD CO.**
**(Formerly Riverside Mfg. Co., Inc.)**
Conway, S. C.
Personnel: E. P. Brown, Sr., pres.; R. E. Wicks, mgr.; E. P. Brown, Jr., sls. mgr.; M. F. Kemerer, plant engr.
Production: (Rated Annual Capacity) 60,000,000 sq. ft. 1/8" basis.
Rated Capacity: 100 tons daily.
Process: Dry
Spec. Gravity: 1.10
Colors: Light tan.
Raw Material Used: Hardwood.

**ANACORTES VENEER, INC., Hardboard Div.**
Anacortes, Wash.
Personnel: Earl Cheldelin, pres.; T. L. Bentley, mgr.; Arthur C. Carlson, supt.; Robert Howlett, sls. mgr.
Production: (Rated Annual Capacity) 36,000,000 sq. ft. 1/8" basis.
1959 Production: 22,000,000 sq. ft.
Rated Capacity: 50 tons daily.
Process: Semi dry.
Panel Sizes: 4x8.
Thickness: 1/10; 1/8; 3/16; 1/4 inches.
Spec. Gravity: 1.00, 1.10.
Colors: Blonde.
Characteristics: Smooth one side.
Percent Into Cut-Up Sizes: 1%.
Raw Material Used: Veneer & core block chips.
Volume (from mill) residues: 7500 tons annually.
Uses: Industrial, remanufacturing, furniture.
Specialty Items: Overlayment; perforated.
Trade Names: Armorbord; Armortex; Armorwood.
Percent of Product for own Use: 5%.

**BOWATER BOARD CO., Div. of Bowaters Southern Paper Corp.**
Catawba, S. C.
Personnel: John G. Robinson, mgr.; P. L. Kvale, supt.; J. R. Hahn, sls. mgr.
Production: (Rated Annual Capacity) 160,000,000 sq. ft. 1/8 inch basis.
Rated Capacity (Tons): 200 daily.
Process: Bowater air process.
Panel Sizes: All sizes up to 4x16 feet.
Thicknesses: 1/10-1/8-3/16-1/4-3/8 inch.
Spec. Gravity: .90-1.10.
Colors: Light & dark.
Characteristics: S2S.
Raw Material Used: Hardwoods.
Volume (from logs): 44,000 cords.
Specialty Items: Tempering.
Trade Names: Bowater Board.

**CANADIAN FOREST PRODUCTS, LTD., Pacific Veneer & Plywood Div.**
Foot of Braid Street, New Westminster, B. C.
Personnel: J. G. Prentice, pres.; D. M. Zilm, mgr. & gen. supt.; Geo. Burgon, hardboard plant supt.; W. E. Burns, sls. mgr.
Production: (Rated Annual Capacity) 160,000,000 sq. ft. 1/16 inch basis.
1959 Production: 152,943,488 sq. ft. 1/16 inch basis.
Rated Capacity (Tons): 125 daily.
Process: Wet.
Panel Sizes: 48x96 inches.
Thicknesses: 1/10; 1/8; 3/16; 1/4; 5/16 inches.

Two 8-drum Yates sanders equipped with American Sheet blower systems.



ELMER HALL, General Manager, Tillamook Veneer Company

*"No substitute for experience"*

"I have been doing business with American Sheet Metal Works better than 20 years, because, in building better blower systems, like anything else, there's no substitute for experience," says Mr. Elmer Hall, Tillamook Veneer's General Manager.

"American Sheet installed three blower systems at our eleven acre plant here in the blimp hangar. One picks up dust from our Yates 8-drum sanders, from the skinner and cut-off saws, and blows it 500 feet to the burner.

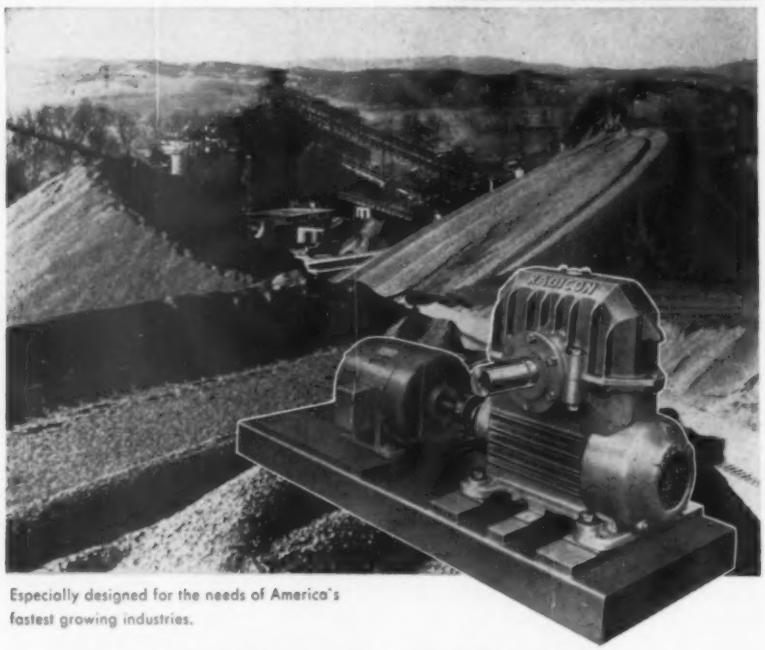
"The second system removes waste from our patch department to the burner. The third system removes gasses from two veneer drying ovens. These American blower systems are very efficient."

AMERICAN SHEET METAL WORKS, Inc.
Manufacturers of Blowers
920 NE Glisan Portland, Oregon BE 2-0111

*American Means Efficiency*

**DAVID BROWN**

**at work around the world**



Especially designed for the needs of America's fastest growing industries.

## *Just Position and Set Six Bolts...*

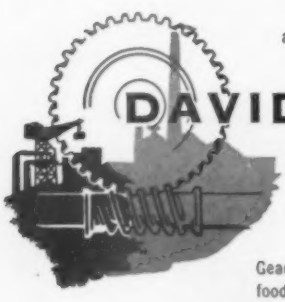
## the new RADICON COMPLETE DRIVES

"Eliminate drive design problems with the versatile new Radicon Complete Drive—just position—set six bolts and you're ready for service."

There's *no* do-it-yourself involved. Simply select the drive (easy as a gearmotor)—and set! Radicon reducers and motors are already carefully shimmed and aligned on heavy fabricated steel base plates of double box construction, firmly ribbed for rigidity. This means minimum stress at the flexible coupling—low maintenance, with complete versatility for service.

Fan-cooled Radicon Speed Reducers, such as type RHU in the above Complete Drive, are being specified for replacement and OEM in many industries these days. They have learned that Radicons are designed, not for show—but for rugged work in all extremes of temperature, dust, dirt and rain.

Immediate delivery 3" to 12", all standard ratios from 5:1 to 60:1. Radicon complete drives supplied by all authorized David Brown factory branches and distributors.



**DAVID BROWN, INC.**

**999 Beecher Street, San Leandro, California**
**(TWX OA452U) (LOckhaven 9-7525)**

**6025 Atlantic Blvd., Maywood, Calif.**
**1224 S. W. Morrison St., Portland, Oregon**

Gear Products for: Mines, paper and pulp mills, chemical plants, food processors . . . conveyors, hoists, agitators, screens, deckers, filters, canning machines, and other industrial equipment.


Spec. Gravity: .95
Raw Material Used: Douglas fir.
Volume (from mill) residues: 35,000
Specialty Items: Tempering; prefinish.
Trade Names: PV.
Percent of Product for own Use: None.

### CASCADES PLYWOOD CORP.

Home Address: Portland, Oregon.
Plant Address: Lebanon, Ore.
Personnel: C. W. Fox, pres.; J. C. Brande, mgr.; Tom Alley, supt.; Fran Phibbs, sls. mgr.; J. R. Stillinger, tech. dir.; John Pearl, plant engr.
Production: (Rated Annual Capacity) 100,000,000 sq. ft. 3/8 inch basis.
1959 Production: 61,500,000 sq. ft. 3/8 inch basis..
Rated Capacity (Tons): 100 daily.
Process: Dry.
Panel Sizes: 4x8 net; 50x100 gross.
Thicknesses: 1/10; 1/8; 3/16; 1/4; 5/32; 3/8 inch.
Spec. Gravity: 1.06
Colors: Light buff.
Characteristics: Smooth 2 sides; high internal bond strength.
Percent Into Cut-Up Sizes: 20%.
Raw Material Used: Douglas fir chips.
Uses: Furniture; overlays; secondary gluing with resin impregnated papers.
Specialty Items: Striating; tongue & groove; prefinish; perforated.
Trade Names: Lebanite.
Percent of Product for own Use: 10%.

### EVANS PRODUCTS CO.

Home Address: Plymouth, Mich.
Plant Address: Corvallis Ore.
Personnel: Edward S. Evans, Jr., pres.; P. Zenczak, mgr. & tech. dir.; E. Chapman, supt.; W. F. Ritchie, sls. mgr.; V. Davis, plant engr.
Production: (Rated Annual Capacity) 40,000,000 sq. ft. 1/8 inch basis.
1959 Production: 39,000,000 sq. ft. 1/8 inch basis.
Rated Capacity (Tons): 40 daily.
Process: Wet process hardboard.
Spec. Gravity: 0.8 - 1.0
Colors: Light blond.
Characteristics: Light blond.
Uses: Paneling.
Specialty Items: Striating; etching; overlayment; tongue & groove; tempering; prefinish, tempered prefinished.
Trade Names: Evanite Hardboard.
Percent of Product for own Use: None.

### FOREST FIBER PRODUCTS

P. O. Box 68, Forest Grove, Ore.
Personnel: Harold Miller, pres.; F. M. Hughes, mgr.; Gene Tower, supt.; Henry Jacobsen, sls. mgr.; Keith Kruse, tech. dir.; Clyde Mason, plant engr.
Production: (Rated Annual Capacity) 60,000,000 sq. ft. 1/8 inch basis.
Rated Capacity (Tons): 150 daily.
Process: Wet.
Panel Sizes: 4x16 feet maximum.
Raw Material Used: Long fiber Douglas fir chips.
Specialty Items: Striating; etching; overlayment; tongue & groove; tempering; prefinish.
Trade Names: Forest Hardboard; Forest 3/8" panel; Forall; Forestex; Sandalwood; Punched Board; Thrif-tone; Tee-N-Gee; Random Plank; Underlayment; Thriftwood.

### GEORGIA PACIFIC CORP.

Home Address: Equitable Building, Portland Ore.
Plant Address: Coos Bay, Ore.
Personnel: Robert B. Pamplin, pres.; Armin A. Wehrle, mgr. of fiber products mfg.; Eugene Mobley, plant mgr.; W. C. Walling, sls. mgr.
Production: (Rated Annual Capacity) 90,000,000 sq. ft. 1/8 inch basis.
Rated Capacity (Tons): 120 daily.
Process: Dry.
Panel Sizes: 4'x16' and under.
Thicknesses: 3/32; 1/8; 3/16; 1/4; 3/8 inches.
Spec. Gravity: 1.08
Colors: Light colored.
Characteristics: Smooth-both-sides; excellent machining qualities; high internal bond strength.
Percent Into Cut-Up Sizes: 10%.
Raw Material Used: Douglas fir fiber.
Volume (from mill) residues: 100%.
Uses: Cabinets; furniture; laminate core stock; garage door panels; displays; wall paneling.
Specialty Items: Perforating; sanding; sealing and grooving.
Trade Names: Georgia-Pacific Hardboard.
Percent of Product for own Use: None.

**KROEHLER MANUFACTURING CO.**
Home Address: Naperville, Ill.
Plant Address: Meridian, Miss.
Personnel: D. L. Kroehler, pres.; Fred L. Meyers, mgr.; Walter Johnson, supt.; C. C. Stewart, tech. dir.; E. J. McFarland, plant engr.
Production: (Rated Annual Capacity) 14,000,000 sq. ft. 3/8 inch basis.
Rated Capacity: 65 tons daily.
Process: Emerite-dry felting process.
Panel Sizes: 60x120".
Thicknesses: 3/8 to 1 inch.
Spec. Gravity: 0.70 - 1.00
Colors: Natural (grey brown)
Characteristics: High dimensional stability.
Percent Into Cut-Up Sizes: 100%.
Raw Material Used: Hardwood lumber residue.
Volume (from mill) residues: 19,500 tons.
Uses: Furniture cores and panels.
Trade Names: Cultured Wood.
Percent of Product for own Use: 100%.

**MASONITE CO. OF CANADA, LTD.**
Home Address: Sun Life Building, Montreal, Quebec, Canada.
Plant Address: Gatineau, Hull Co., Quebec, Canada.
Personell: J. Copeland, board mill mgr.

**MASONITE CORP.**
Home Address: Chicago, Ill.
Plant Address: Ukiah, Calif.
Personnel: John M. Coates, pres.; William A. Cotton, vice pres. in chg. of mfg.; Paul B. Shoemaker; vice pres. marketing; F. O. Marion, vice pres. sls.; Donald J. Gray, vice pres.; Dean Thatcher, gen. mgr., Ukiah; Orcutt W. Frost, dir. of research & development; Frank Lesniak, chief engr.
Production: (Rated Annual Capacity) 200,000,000 sq. ft. 3/8 inch basis.
Process: Exploded wood fiber process, wet and semi-dry type.
Panel Sizes: Up to 5x16 feet.
Thicknesses: 1/10 to 2 inches.
Spec. Gravity: 0.9-1.4.
Colors: Brown.
Characteristics: Smooth, dense, wear-resistant surface.
Raw Material Used: Hardwood and softwood.
Uses: Many in building and industry; walls, ceilings, cabinets, underlayment, siding, decorative specialties, bathroom and kitchen "tiles," concrete forms, etc.
Specialty Items: Striating, groove, tempering, embossed patterns, grooving, priming, graining.
Trade Names: Masonite Presdwood, Tempered Presdwood; Panelwood; Underlayment; Tempered Duolux; Dorlux; Tempertile; Leatherwood; Ridgeline; Peg-Board; Shadowvent Siding; Panelgroove; Ridgegroove, Concrete Form Presdwood; Benelex; Primecote products, Seadrift; Misty Walnut, Panelok Wall System, Royalcote, Sunline.

**MASONITE CORP.**
Home Address: Chicago, Ill.
Plant Address: Laurel, Miss.
Personnel: John M. Coates, pres.; William A. Cotton, vice pres. in chg. of mfg.; Paul B. Shoemaker, vice pres. marketing; F. O. Marion, vice pres. sls.; Donald J. Gray, vice pres., gen. mgr., Laurel; Orcutt W. Frost, dir. of research and development; Frank Lesniak, chief engr.
Production: (Rated Annual Capacity) 1,160,000,000 sq. ft. 3/8 inch basis.
Process: Exploded wood fiber process, wet and semi-dry type.
Panel Sizes: Up to 5x18 feet.
Thicknesses: 1/10 to 2 inches.
Spec. Gravity: 0.9-1.4.
Colors: Brown.
Characteristics: Smooth, dense, wear-resistant.
Raw Material Used: Hardwood and softwood.
Uses: Many in building and industry; walls; ceilings; cabinets; underlayment; siding; decorative specialties; bathroom and kitchen "tiles"; concrete forms, etc.
Specialty Items: Striating, groove, tempering embossed patterns; grooving, priming; graining.
Trade Names: Masonite Presdwood; Tempered Presdwood; Panelwood; Underlayment; Tempered Duolux; Dorlux; Tempertile; Leatherwood; Ridgeline; Peg-Board; Shadowvent Siding; Panelgroove; Ridgegroove, Concrete Form Presdwood; Benelex; Primecote products, seadrift; Misty Walnut, Panelok Wall System, Royalcote, Sunline.


# *Experience Counts!*

## . . . ANOTHER GRENCO FIRST!

**NOW**—In addition to complete packaged finishing plants for PARTICLE BOARD, HARDBOARD and PLYWOOD PANELS, Grenco has also established a $75,000.00 pilot production line for the evaluation of various processes.

**THE PILOT PLANT**—can run full sized panels from 10 to 60 FPM. Application equipment includes roller coating, curtain coating, and airless spray. Drying equipment includes warm air convection, DRI QUIK ceramic infra red ovens, and forced air cooling. Burnishing equipment includes buffers, wide belt sanders and flexible drum sanders.

**FUTURE**—equipment will include reverse roller coating, knife coating and HAMANT grain printing machinery.

**GRENCO INC.**—by building this pilot plant will be able to evaluate for its customers new equipment, new coatings and new finishing techniques.

GRENCO INC. ENGINEERING · MANUFACTURING

*For Further Information Wire, Phone or Write*

GRENCO, INC.
2035 S. W. 58th Avenue
PORTLAND 1, OREGON
Phone: CA 6-4096
Cable address: GRENCO

Production problems have you behind the 8-ball? Take a cue from the many producers who've increased efficiency by installing an

**AUTOMATIC ADDITIVE PROPORTIONING SYSTEM**

- Accuracy for resin savings and uniformity of boards
- Reliability for minimum downtime and maintenance expense

**VARIABLE SPEED DRIVES**

- Easy synchronization, using trouble-free circuits, with a high order of accuracy
- Modification of command and feedback signals permits variations to meet any process requirements

**CONVEYOR INTERLOCK SYSTEMS**

- Conveyors start and stop when needed, require no attention
- Acceleration and deceleration rates controllable

controls and communications co.

1695 W. 1st Ave.
Eugene, Oregon
Diamond 5-8561

**NU-PLY CORP.**
Bemidji, Minn.
Personnel: F. Russell Eggers, pres. & mgr.; Archie Gulsvig, supt.; Paul Barthelemy, sls. mgr.; Don Gould, tech. dir.; Don Hanson, plant engr.
Production: (Rated Annual Capacity) 40,000,000 sq. ft. 1/8 inch basis.
1959 Production: 24,000,000 sq. ft.
Rated Capacity (Tons) 60 daily.
Process: Dry felting.
Panel Sizes: Up to 49 x 97½ inches.
Thicknesses: 13/32 to 3/8 inches.
Spec. Gravity: 1.04 and 1.11.
Colors: Light.
Characteristics: Smooth both sides; high internal bond.
Percent Into Cut-Up Sizes: 25%.
Raw Material Used: Aspen.
Volume (from logs): 12,000 tons annually.
Uses: Walls; furniture; toys; trailers; displays; backing sheets; cabinets; laminating.
Specialty Items: Tempering.
Trade Names: Bemidji-Bord; Door-Life; Door-Bord; Undr-Layr.
Percent of Product for own Use: None.

**OREGON LUMBER CO., Sub. of Edward Hines Lumber Co.**
Home Address: 200 S. Michigan Ave., Chicago, Ill.
Plant Address: Dee, Ore.
Personnel: Charles M. Hines, pres.; William J. Runckel, mgr.; Edward N. Jolly, supt.; David W. Marti, sls. mgr.; Harold M. Ely, tech. dir.
Production: (Rated Annual Capacity) 75,000,000 sq. ft. 1/8 inch basis.
1959 Production: 61,000,000 sq. ft.
Rated Capacity (Tons) 75 daily.
Process: Allwood-Asplund.
Panel Sizes: 4x16 feet.
Thicknesses: 1/10 through 5/16 inches.
Spec. Gravity: 1.
Colors: Light Brown.
Percent Into Cut-Up Sizes: None.
Raw Material Used: Sawmill chips.
Volume (from mill) residues: 21,816 tons annually.
Uses: Furniture, automotive; general construction.
Specialty Items: Striating; etching; tongue & groove; tempering; prefinish; primed; grained; siding.
Trade Names: Allwood Prestpanel; Allwood, Stri-bord, Weavbord; Shadobord; Louverbord; Sho-bord; Heatherbord.
Percent of Product for own Use: 5%.
Sales Agents: Simpson Logging Co.; Certain-teed Products Corp.

**PRAIRIE FIBREBOARD, LTD.**
Saskatoon, Sask., Canada.
Personnel: R. Hauer, pres., Robert W. Hauptli, mgr.; V. E. Hansen, supt.; J. W. Macaulay, sls. mgr.
Production: (Rated Annual Capacity) 12,500,000 sq. ft. ¼ and ½ inch basis.
Rated Capacity (Tons) 50 daily.
Panel Sizes: Standard 4x8 feet.
Percent Into Cut-Up Sizes: None.
Raw Material Used: Pulpwood.
Specialty Items: Prefinish, woodgrained.
Trade Names: Panel-fast.

**SUPERWOOD CORP.**
Duluth, Minn.
Personnel: M. J. Opsahl, pres.; K. V. Hafner, mgr.; Geo. Jondal, supt.; Robt. Stephany, sls. mgr.; Geo C. Fewson, tech. dir.
Production: (Rated Annual Capacity) 144,000,000 sq. ft. 1/8 inch basis.
1959 Production: 85,000,000 sq. ft.
Process: Wet.
Panel Sizes: 4x8 and 4x16 feet.
Thicknesses: 1/12; 1/10; 1/8; 3/16; ¼; 5/16 inches.
Spec. Gravity: 0.640.
Colors: Natural.
Percent Into Cut-Up Sizes: 20%.
Raw Material Used: Aspen pulpwood.
Uses: Building field; underlayment; exterior siding; cabinets, etc.; Industrial; fabricated parts, etc.
Specialty Items: Tongue & groove; tempering.
Trade Names: Superwood.

**THE TEMPRON CORP.**
Plant Address: P.O. Box 44, El Paso, Tex. (to be completed mid-1960.
Personnel: Dr. J. F. T. Berliner, Pres.; The Tayler Corp., Mgr.; H. K. Linzell of Tayler Corp., Supt.; J. G. Stemples, Sls. Mgr.; J. B. Graves, Vice Pres. & Sec.

We're proud of the mechanical accuracy of the Friden fully automatic calculator. *But neither it nor any other calculator can get a right answer from a wrong entry.*

The calculator that allows the smallest margin for operator error will actually prove to be the most accurate.

The Friden SBT requires fewer manual keystrokes, fewer operator decisions than any other calculator on the market.* *In terms of day-to-day output, this makes it the most accurate calculator you can buy.*

For a no-obligation, ten-minute demonstration of "The Thinking Machine of American Business," call your Friden man or write: Friden, Inc., San Leandro, California.

**This is PRACTIMATION: automation so hand-in-hand with practicality there can be no other word for it.* © 1960 FRIDEN, INC.

Friden Creates A New World For Business®

Friden

FRIDEN, INC., SALES, INSTRUCTION, SERVICE THROUGHOUT THE U.S. AND THE WORLD.

Production: (Rated Annual Capacity) 100,000,000 sq. ft. 1/8 inch basis.
Rated Capacity (Tons): 100 daily.
Process: Wet-dry process.
Thicknesses: 1/10 to 3/8 inches.
Spec. Gravity: 66 pound/cu. ft. (approx.).
Characteristics: tempered, smooth two sides.
Raw Material Used: Creosote Bush.
Trade Names: Tempron.

**U. S. GYPSUM CO.**
Home Address: Chicago, Ill.
Plant Address: Pilot Rock, Ore.
Personnel: O. M. Knode, pres.; S. E. Martin, mgr.; A. L. Rabb, supt.; R. D. Stephan, vice pres. sls.; R. Casten, tech. dir.
Production: (Rated Annual Capacity) See Insulation Board listing for more details.

**WEYERHAEUSER CO., Silvatek Div.**
Home Address: Tacoma, Wash.
Plant Address: Klamath Falls, Ore. (2 plants).
Personnel: Norton Clapp, pres.; R. D. Pauley, mgr.; N. J. Briggs, supt.; D. C. Greeley, sls. mgr.; A. M. Fisken, mgr. of mfg.; Dale Alter, plant engr.
Production: (Rated Annual Capacity) 80,000,000 sq. ft. 1/8 inch basis.
Process: Semi-dry process, developed by Weyerhaeuser Co.
Panel Sizes: Up to 4x16 feet.
Thicknesses: 1/12; 1/10; 1/8; 3/16; 1/4; 5/16.
Colors: Light tan and brown.
Characteristics: Excellent machining, bendability; paint finishing.
Uses: Building and industry—walls, ceilings, floor underlayment, siding, cabinet work, decorative specialties.
Specialty Items: Striating; tempering; prefinish; perforating; U-Groove; V-Groove; Prime Coated; planing; flail sanding.
Trade Names: Weytex; Weylite; Weyfair; Weybase; Weytone; Weygrain.
Sales Agents: Silvatek Division of Weyerhaeuser Co. and authorized distributors, nationwide.

**WISCONSIN WOOD PRODUCTS, INC.**
Phillips, Wis.
Personnel: Harry Gustafson, pres.; John F. Campbell, mgr.; E. A. Leonard, sls. mgr.
Production: (Rated Annual Capacity) 35,000,000 sq. ft. 1/8 inch basis.
1959 Production: 9,580,000 (started production 4/1/59).
Rated Capacity (Tons) 45 daily.
Process: Emerite dry process.
Panel Sizes: 4x8 feet.
Thicknesses: 1/10 to 5/16 inches.
Spec. Gravity: .90 to 1.20.
Colors: Dark.
Characteristics: High MOR, high internal bond; stability.
Raw Material Used: Hardwood pulp.
Uses: Industrial & Retail.
Trade Names: Lionite.

## INSULATION BOARD

**ABITIBI CORP.**
Home Address: Penobscot Bldg., Detroit, Mich.
Plant Address: Alpena, Mich.
Personnel: D. W. Ambridge, pres.; C. H. Rosier, vice pres. & gen. mgr.; E. J. Schultz, vice pres. sls.; O. B. Eustis, mill mgr.; R. E. Paul, tech. dir.; W. C. E. Wood, plant mgr.
Production: (Rated Annual Capacity) Complete information in hardboard listing.
Process: Wet process.
Panel Sizes: All conventional sizes.
Thicknesses: 5/16 to 4 inches.
Spec. Gravity: .214 to .345.
Raw Material Used: Northern hardwoods and softwoods.
Percent of Product for own Use: None.

**ALLIED CHEMICAL CORP., Barrett Div.**
Home Address: New York 6, New York.
Plant Address: Dubuque, Iowa.
Personnel: H. Dorn Stewart, pres.; H. W. Beuscher, plant mgr.; R. E. Oldendorph, supt. of operations; W. D. Herbert, Marketing mgr.; J. N. Cosby, Dir. of Research; L. H. Keesey, plant engr.
Production: (Rated Annual Capacity) 75,000,000 sq. ft. 1/2 inch basis.
Process: Semi-chemicals; Pandia digestors.
Panel Sizes: 13x25 feet.
Thicknesses: 5/16, 3/8, 1/2, 25/32 inches.
Percent Into Cut-Up Sizes: 100%.
Raw Material Used: Pulpwood; Flax Shives.
Volume (from logs): 15,000 tons.


# STOPS

BLUE STAINS

## NOXTANE

NOXTANE treats lumber in just a few seconds—quickly kills fungi and molds—stops ugly sap stains—helps eliminate costly degrading—all for less than 25¢ per MBM.

NOXTANE mixes readily in hot or cold water—non-corrosive to equipment—leaves no residue—relatively dust-free and non-irritating—completely safe when used as directed.

Can be applied by the spray or dip method—available in 10-lb. bags packed in cartons.

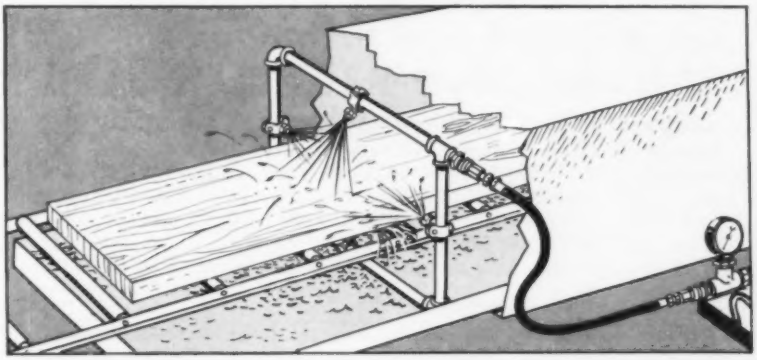
BLUE & BROWN STAINS

## NOXIDE

NOXIDE contains 5% Sodium Azide for control of brown stain in freshly sawn Western Pine lumber and 35% Sodium Pentachlorophenate technical to stop blue sap stain—plus other chemicals for more effective action.

NOXIDE can be mixed with cold or hot water—leaves lumber residue-free—completely safe when used as directed.

Can be used as a spray or dip—available in 10-lb. bags packed in fibre cartons.



**FOR IMMEDIATE DELIVERY, CONTACT YOUR NEAREST DISTRIBUTOR OR WOOD TREATING CHEMICALS CO.**

Cascade Industrial Supply Co.
Redding, Calif.

Munnell & Sherrill, Inc.
Roseburg, Ore.

Munnell & Sherrill of Calif.
Arcata, Calif.

Patterson Sales Co.
El Paso, Texas

Stevens Equipment Co.
110 Division St.
Salem, Ore.

**WOOD TREATING CHEMICALS CO.**
**1886 Dennison St.** **Oakland 6, Calif.**
*Warehouses:* Oakland, Calif. • Grants Pass, Ore. • Klamath Falls, Ore. • Portland, Ore. • El Paso, Texas.

WOOD TREATING

Uses: Exterior sheathing; ceiling tile; interior finish; roof insulation.
Specialty Items: Asphalt coatings; tongue and groove; prefinish.
Trade Names: Barrett; Rigidwall; Barretone.

**ALLIED CHEMICAL CORP., Barrett Div.**
Home Address: New York 6, New York.
Plant Address: Sunbury, Pa.
Personnel: H. Dorn Stewart, pres.; J. I. Geary, plant mgr.; W. D. Herbert, marketing mgr.; J. N. Cosby, dir. of research; E. E. Wilson, plant engr.
Production: (Rated Annual Capacity) 100,000,000 sq. ft. ½ inch basis.
Process: Semi-chemicals; Pandia digestors.
Panel Sizes: 13x25 feet.
Thicknesses: 5/16, 3/8, ½, 25/32 inches.
Percent Into Cut-Up Sizes: 100%.
Raw Material Used: Pulpwood.
Volume (from logs) 40,000 tons.
Uses: Exterior sheathing; ceiling tile; interior finish; roof insulation.
Specialty Items: Tongue and groove; prefinish; asphalt coatings.
Trade Names: Barrett; Rigidwall; Barretone.

**ARMSTRONG CORK CO.**
Home Address: Lancaster, Pa.
Plant Address: Macon, Ga.
Personnel: Clifford J. Backstrand, Pres.; E. A. Worm, Jr., Plant Mgr.; J. O. Sampson, Mgr. Lumber Dealer Sls.
Production: (Rated Annual Capacity) 570,000,000 sq. ft. ⅛ inch basis.
1959 Production: 85% capacity.
Process: Wet forming of wood pulp.
Specialty Items: tongue & groove; prefinish.
Trade Names: Cushiontone — acoustical ceiling tile; Temlok—sheathing, decorator tile, interior plank.

**ARMSTRONG CORK CO.**
Home Address: Lancaster, Pa.
Plant Address: Pensacola, Fla.

Illustrated: Mann-Russell Electronic Lumber Edge-Gluer, similar in appearance and operation to the new M-R Continuous Edge-Gluer for Particle Board.

*Mann-Russell Electronic*
CONTINUOUS
EDGE-GLUER
for Particle Board

**NOW!**

**. . . a brand new technique for EDGE-GLUING PARTICLE BOARD**

Mann-Russell has built a new, modern manufacturing, research and product development plant in order to continue the creation of new techniques . . . new methods for continued and greater utilization of available FOREST PRODUCTS. Mann-Russell has been the leader in this specialized field for 15 years, and the M-R Continuous Edge-Gluer for PARTICLE BOARD is one of the latest accomplishments in a long line of Electronic Gluing equipment manufactured by this firm.

**SPECIFIED PANEL DIMENSIONS**
Standard size panels electronically edge-glued and automatically cut to width and length, continuously.

**MINIMIZES WASTE**
Offal reduced to minimums not previously possible.

**CUSTOM MADE TO FIT YOUR NEEDS**
Mechanical components required for the PARTICLE BOARD GLUING application may possibly include some equipment now available in *your* plant. The Mann-Russell Electronic Gluing and associated equipment required includes: (1) Infeed Lay-up conveyor; (2) Main Press; (3) Automatic traveling Cut-off Saw and auxiliary conveyors.

*Write, wire or phone for complete information*

**Mann-Russell Electronics, Inc.**
S. 23rd & Pacific, or 1401 Thorne Road • Tacoma 2, Washington • Phone: FUlton 3-1591


**CELOTEX CORP., THE**
Home Address: 120 S. LaSalle St., Chicago 3, Ill.
Plant Address: L'Anse, Mich.
Personnel: Henry W. Collins, pres.; F. J. Alfies, mgr.; A. P. Wirtanen, supt.; Marvin Greenwood, vice pres.-merchandising; A. H. Phillipp, tech. dir.; R. C. Roberts, plant engr.
Rated Capacity (Tons) 175 daily (estimated).
Panel Sizes: Random.
Thicknesses: ½, 1, 1½, 2 inches.
Colors: Natural & white.
Raw Material Used: Woodpulp.
Uses: Sheathing; ceiling tile; roof insulation; insulating roof deck.
Trade Names: Celotex, Hush-Tone; Acousti-Celotex; Strong-Wall.
Percent of Product for own Use: None.

**CELOTEX CORP., THE**
Home Address: 120 S. LaSalle St., Chicago 3, Ill.
Plant Address: Marrero, La.
Personnel: Henry W. Collins, pres.; W. M. Lemkuhl, mgr.; R. G. Lacey, supt.; Marvin Greenwood, vice pres.-merchandising; E. Fredericks, Jr., tech. dir.; J. L. Dixon, plant engr.
Rated Capacity (Tons) 875 daily.
Panel Sizes: Random.
Thicknesses: ½, 1, 1½, 2 inches.
Raw Material Used: Bagasse.
Uses: Sheathing; ceiling tile; roof insulation; perimeter insulation; insulating roof deck.
Trade Names: Celotex; Flexcell; Acousti-celotex; Hush-Tone; Strong-Wall.
Percent of Product for own Use: None.

**DIERKS FORESTS INC.**
Home Address: 810 Whittington Ave., Hot Springs, Ark.
Plant Address: Broken Bow, Okla.
Production: (Rated Annual Capacity) Start Construction January, 1961.

**FLINTKOTE COMPANY—Canec Plant**
Home Address: Los Angeles, Calif.
Plant Address: Hilo, Hawaii.
Personnel: Wilson Harvey, vice pres. & gen mgr. (Los Angeles); George J. Pecaro, pres., (New York); K. A. McLarty, mgr. (Hilo); J. Kinard, fab. supt.; B. J. Travis, bd. mill supt.; F. H. Haney, tech. dir. (Los Angeles); A. C. Costa, plant engr.
Production: (Rated Annual Capacity) 130,000,000 sq. ft. ½ inch basis.
1959 Production: 76,000,000.
Rated Capacity (Tons): 125 daily.
Process: Oliver vacuum former.
Panel Sizes: Various.
Thicknesses: ¼, 5/16, 3/8, ½, 5/8, ¾, 25/32, 7/8, 1 inch.
Colors: White and pastel colors.
Characteristics: Made from Hawaiian Canec Fibre.
Percent Into Cut-Up Sizes: 100%.
Raw Material Used: Bagasse, waste paper.
Uses: Insulation, acoustical, treatment, structural board, decorative board.
Specialty Items: Tongue & groove; prefinish; fire-resistant.
Trade Names: Flintkote-Canec; Ceil Dek; Decotone; Decotile.
Percent of Product for own Use: None.

**FLINTKOTE CO.**
Home Address: 30 Rockefeller Plaza, New York 20, New York.
Plant Address: Meridian, Miss.
Personnel: George J. Pecaro, pres.; Glenn Ball, mgr.; William Feick, Jr., vice pres. sales; Richard H. Cubberley, tech. dir.; Harlowe R. Zinn, chief engr.
Production: (Rated Annual Capacity) 200,000,000 sq. ft. ½ inch basis.
1959 Production: 180,000,000 sq. ft. ½ inch basis.
Rated Capacity (Tons) 250 daily.
Process: Mechanical.
Panel Sizes: Various.
Thicknesses: 3/8 through 1 inch.
Spec. Gravity: 12 to 20 cu. ft.
Characteristics: Structural, decorative, acoustical.
Percent Into Cut-Up Sizes: 100%.
Raw Material Used: Wood.
Uses: Building construction.
Specialty Items: Overlayment, tongue & groove; prefinish; surface coatings.
Trade Names: Flintkote.

**HOMASOTE CO.**
P. O. Box 441, Trenton, N. J.

**JOHNS MANVILLE CORP.**
Home Address: 22 East 40th St., New York, N. Y.
Plant Address: Klamath Falls, Ore.

| Sound Absorption | NRC |
|---|---|
| ¼" punched Cedawood | .55 |
| ½" drilled ceiling tile | .55 |

| Sound Transmission Loss | TL |
|---|---|
| ⅜" plywood plus 15/32" Insulation | 30 |
| ¼" Cedawood | 31 |

**Fire Retardant Available**

A guarantee with each panel: no bleeding-out of fire retardant salts and no discoloration.

* *Registered Trade Mark for Columbia's family of Flakeboards*

Cedawood® plant engineered by
**INDUSTRIAL DEVELOPMENT CO.,**
Tacoma, Washington

# COLUMBIA PLYWOOD CO.

**P. O. Box 1767 Seattle, 11, Washington**

---

# BIG NEWS for SMALL MILLS!

Sel-Set®

## Announcing THE NEW
# Econ-o-matic LINE

### Of Low Cost Remote Control Setworks For Small Carriages

- **Big Setworks Accuracy**
- **High Quality & Performance**
- **2, 3 & 5 HP Sizes**
- **25% Lower Than Former Cost**
- **Available Now For Fast Delivery**

Two sawyer's control handles are furnished with each Econ-O-Matic setworks.

Illustrated above is the sawyer's control console for the Model SWE-A-6, with six-position pre-set, repeating setting control.

Here for the first time is a high quality remote control setworks specifically designed for small carriages . . . one that offers famous Sel-Set accuracy and performance features yet is priced within reason for the small mill.

Continuing engineering advancements in design and performance have enabled Sel-Set, the leader in carriage automation, to develop this new low cost Econ-O-Matic line that includes the basic safety system used in all the standard models of Sel-Set setworks and retains all of the components necessary for a high degree of accuracy and top production.

The new SWE Model Econ-O-Matics are available with from 2 to 12 setting positions; taper controls; dog and offset override controls; master adjustment control; off and on switch, also with optional push button controls. The 2 HP model is designed for carriages with 24 to 30" openings, the 3 HP model for 32 to 40" openings and the 5 HP model for 42 to 48" openings, all based on 16' log lengths.

If you are a manufacturer of small sawmill equipment or interested in converting a small carriage it will pay you to investigate the new low cost Sel-Set Econ-O-Matic Setworks.

Watch for the announcement of the all-new SEL-SET all-purpose edger, line-bar and resaw setworks.

**The Wheland Company of Chattanooga, Tennessee, has selected the new Sel-Set Econ-O-Matic setworks to be used exclusively on their 30-30 carriage. WATCH FOR IT SOON.**

SEL-SET *Machinery Corporation*

**290 Moyer Lane Box 1035 Salem, Oregon**
**EMpire 3-3123**

Write, Wire or Phone for Detailed Information and Price Quotations:

THE WHELAND CO. Chattanooga, Tenn.
MILLER MACHY. CO. Missoula, Montana
KLAMATH MACHY. CO. Klamath Falls, Ore.
GENERAL MACHY. CO. Spokane, Washington
NORTHEAST OHIO MACHINE BUILDERS, INC. Columbiana, Ohio

In Canada
ELWORTHY & CO., LTD. Vancouver, B. C.

®SEL-SET, SELECT-O-MATIC ARE REGISTERED TRADEMARKS OF SEL-SET MACHINERY CORPORATION

U. S. PATENT NOS. 2574393, 2661036, 2661402, 584786, 2696853, 2888047, 2893448.
CANADIAN PATENT NOS. 39470-1951, 502418-1954, 511025-1955, 514898-1955.

**JOHNS MANVILLE CORP.**
Home Address: 22 East 40th St., New York, N. Y.
Plant Address: Natchez, Miss.

**JOHNS MANVILLE CORP.**
Home Address: 22 East 40th St., New York, N. Y.
Plant Address: Jarrett, Va.

**KAISER GYPSUM CO., INC.**
Home Address: Kaiser Center, Oakland, Calif.
Plant Address: St. Helens, Ore.
Personnel: John D. Cassidy, St. Helens, mgr.; H. W. Hance, tech. dir.; M. Slavich, plant engr.
Production: ( Rated Annual Capacity) 120,000,000 sq. ft. ½ inch basis.
1959 Production: 117,000,000 sq. ft.
Rated Capacity (Tons) 125 tons saleable product.
Thicknesses: ⅜ to 5 inches.
Colors: Natural tan, white.
Raw Material Used: Wood chips, sizing, asphalts.
Volume (from Mill) residues 50,000 tons.
Uses: Building board (interior); sheathing (exterior); tiles and plank (interior); siding (exterior); roof insulation.
Trade Names: Kaiser Fir Tex.
Percent of Product for own Use: None.

**MacANDREWS & FORBES CO.**
3rd St. & Jefferson Ave., Camden 4, N. J.
Personnel: R. M. Bickerstaff, Jr., pres.; B. H. Gominger, mgr.; R. Shaffer, supt.; F. C. Abbott, sls. mgr.; C. K. Swift, tech. dir.; W. Watkins, plant engr.
Panel Sizes: 4x6, 8, 9, 10, 12 feet.
Thicknesses: ⅜; ½; 25/32 inches.
Spec. Gravity: 18.0
Percent Into Cut-Up Sizes: 10%.
Raw Material Used: Licorice Root, pine, paper stock.
Uses: Sheathing and roof board.
Trade Names: Lockaire, Maftex.
Percent of Product for own Use: None.
Sales Agents: Plastergon Wallboard Co.; Maftex Insulation Board Sales Co.

**MINNESOTA & ONTARIO PAPER CO., Insulite Div.**
Home Address: 500 Investors Bldg., Minneapolis, Minn.
Plant Address: International Falls, Minn.
Personnel: Robert Faegre, pres.; George Gibb, gen. mill mgr.; Paul A. Mahony, sls. mgr.; A. S. Bull, tech. dir.
Raw Material Used: Wood fibers.
Uses: Structural and interior finish.
Trade Names: Insulite.

**NATIONAL GYPSUM CO.**
Home Address: Buffalo, New York.
Plant Address: Mobile, Ala.
Personnel: F. A. Manske, pres.; George Cook, mgr.; P. E. Welch and W. H. Bechtel, supts.; M. F. Cerruti, sls. mgr.; D. D. Crandall, tech. dir.
Production (Rated Annual Capacity) 240,000,000 sq. ft.
Rated Capacity (Tons): 375 daily.
Process: Plant No. 1 groundwood system; Plant No. 2 semi-chemical system.
Panel Sizes: 4'x10'.
Thicknesses: ⅜ ½; ⅝; ¾; 25/32; 1 inches.
Colors: Natural, white, decorated.
Characteristics: Highly rated for insulating and acoustical values.
Percent Into Cut-Up Sizes: 100%.
Raw Material Used: Pine and hardwood.
Volume (from logs): 33,000 tons annually.
Uses: Insulation and acoustical.
Trade Names: Gold Bond.
Percent of Product for own Use: None.

**PRAIRIE FIBREBOARD LTD.**
Saskatoon, Sask., Canada.
Personnel: R. Hauer, pres.; Robert W. Hauptli, mgr.; V. E. Hansen, supt.; J. W. Macaulay, sls. mgr.
Production: (Rated Annual Capacity) 15,000,000 sq. ft. (See listing under hardboard plants.)

**SIMPSON LOGGING CO.**
3rd & Franklin, Shelton, Wash.
Personnel: H. W. McClary, vice pres. & gen. mgr.; Harvey H. Warnaca, mgr.; Woodrow Johnson, supt.; J. L. Wetherby, sls. mgr.; E. J. Reichman, tech. dir.; O. J. Ashford, plant engr.
Production: (Rated Annual Capacity) 96,000,000 sq. ft. ½ inch basis.
1959 Production: 92,000,000 sq. ft. ½ inch basis.
Rated Capacity (Tons): 110 daily.
Thicknesses: ⅜ to 3 inches.
Spec. Gravity: .29 average.
Raw Material Used: Fir and hemlock.
Volume (from mill) residues: 38,500 tons annually.
Uses: Structural, decorative; insulating and acoustical.
Specialty Items: Tongue & groove.
Trade Names: Simpson.
Percent of Product for own Use: None.
Sales Agents: Own sales force and regional offices.

**SOUTHERN PINE LUMBER CO.**
Diboll, Tex.
Personnel: Arthur Temple, Jr., pres.; Carrol Allen, mgr.; C. H. Shepherd, Jr., supt.; Latane Temple, sls. mgr.; F. Stuart McGee, tech. dir.
Production: (Rated Annual Capacity) 120,000,000 sq. ft. ½ inch basis.
1959 Production: 60,000,000 sq. ft.
Rated Capacity (Tons): 135 tons daily.
Process: Templebord.
Panel Sizes: 24" and up width x 14' long.
Thicknesses: ⅜; ½; 25/32; 1; 2; 3 inches.
Characteristics: Wood fiber insulation board.
Percent Into Cut-Up Sizes: 100%.
Raw Material Used: Wood chips.
Volume (from mill) residues: 40,000 tons annually.
Uses: Home & commercial construction.
Specialty Items: Tongue & groove; prefinish.
Trade Names: Wood-Bord; Certainteed.
Percent of Product for own Use: None.
Sales Agents: Certain-Teed Products.

**THE TEMPRON CORP.**
Address: P. O. Box 44, El Paso, Tex. (To be completed mid-1960).
Personnel: (See hardboard listing.)

**U. S. GYPSUM CO.**
Home Address: Chicago, Illinois.
Plant Address: Pilot Rock, Ore.
Personnel: O. M. Knode, pres.; S. E. Martin, mgr.; A. L. Rabb, supt.; R. D. Stephan, vice pres. sls.; R. Casten, tech. dir.
Production: (Rated Annual Capacity) 120,000,000 sq. ft. ⅛ and ½ inch basis.
Specialty Items: Tempering; prefinish.
Trade Names: Duron.

*This Armco Building, used for lumber storage and processing, was erected by the owner and a crew of his men.*

# Armco Steel Buildings Can Handle *Your* Storage Needs, Too

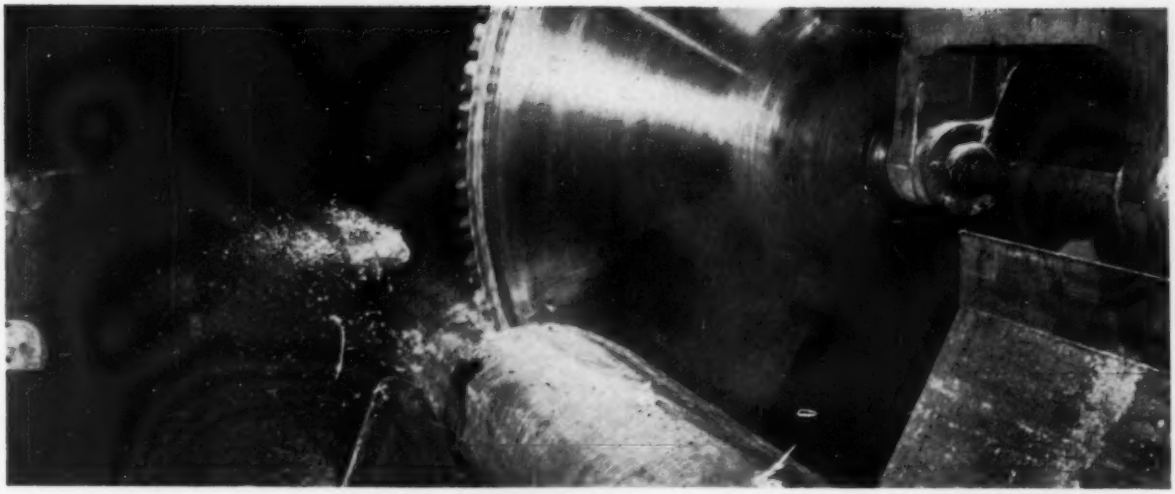
New steels are born at Armco

Durable, weathertight and maintenance-free, Armco Steel Buildings can solve your storage problems. From materials to machinery, these sturdy buildings give your property lasting protection. And they go up in a hurry . . . no costly delays. Armco Buildings can be erected in a fraction of the time it takes with other construction methods. Write us for complete details about Armco Steel Buildings for storage, processing, maintenance and many other uses. Find out why Armco Buildings are a better way to build. Armco Drainage & Metal Products, Inc., 2180 Milvia Street, Berkeley 4, California or P. O. Box 751, Federal Station, Portland 7, Oregon.

**ARMCO DRAINAGE & METAL PRODUCTS**

*Subsidiary of* ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division
The National Supply Company • The Armco International Corporation
Union Wire Rope Corporation



# BOTTLENECK?

Have you found that with modern "speed-ups" your sawmill deck is holding up profit-making production? Many mills faced with this problem have switched to SPEAR & JACKSON "IT*" Saws. Engineered expressly for fast, clean cutting and made from alloy steels incorporating the new "Matthew" temper, they are a must for any efficient operation.

**SPEAR & JACKSON**

*"The Saw Without a Flaw"*

Eugene, Ore., U.S.A.

* *Inserted Tooth*

50-123A

# *Linings live longer with* DFC *refractories!*

**Dragon brand semi-silica brick:** high crushing strength (2000-2050 p.s.i.), modulus of rupture—350-450 p.s.i., manufactured in standard series or special shapes.

**PX-33:** plastic refractory or moldable fire brick, no special shapes necessary, outlasts first quality fire brick. High heat and spall resistant, low shrinkage. For monolithic construction and complete lining patches.

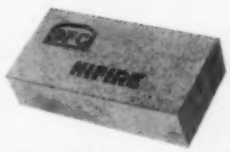
**Latite bonding mortar:** wet or dry type; super duty, air setting, high temperature bonding mortar; low shrinkage, high refractoriness; high-alumina base with DFC bonding agents. For high heat duty and super duty air setting of dipped, spread or thick-troweled joints.

DFO-11

Increase the life expectancy of your installations with DFC superior quality refractories and refractory specialties. DFC offers greater uniformity and higher quality.

***DFC fire brick resist chemical action!***

**Hi-Fire brick:** high heat duty firebrick, superior in density and hardness, high temperature resistance, low spall loss, Cone 32-32½ (3130°F.). For boilers, incinerators, kilns, etc.




Consult us about *your* refractory problems!

**Denver Fire Clay Company** · DENVER · SALT LAKE CITY · NEW YORK

3033 Blake Street • Denver 17, Colorado

Please send information on DFC Refractories and Mortars

Name.....

Company.....

Address.....

City and State.....

# PARTICLEBOARD

**ABERDEEN PLYWOOD & VENEERS INC.**
P. O. Box 1036.
Foot of Alder St., Aberdeen, Wash.
Personnel: Monford A. Orloff, pres.
Plant under construction. Start up May, 1961.

**ABITIBI POWER & PAPER CO. LTD.**
Home Address: 408 University Ave., Toronto, Ontario, Canada.
Plant Address: Sturgeon Falls, Ontario, Canada.
Personnel: D. W. Ambridge, pres.; R. E. Costello, gen. mgr. Panelboard Div.; E. G. Heslop, mill mgr.; E. A. McLean, supt.; A. W. Gray, gen. sls. mgr.; D. L. Amos, control supt.; P. M. Rebin, plant engr.
Production: (Rated Annual Capacity) 17,556,000 sq. ft. 5/8 inch basis.
Process: Abitibi Multiplaten.
Panel Sizes: 4x8 ft.
Thicknesses: 1/4" to 1 1/8".
Spec. Gravity: 0.60.
Colors: Natural.
Percent Into Cut-Up Sizes: 5%.
Raw Material Used: Woodpulp.
Uses: Core stock; decorative panels; construction.
Trade Names: Platewood.

**AMERICAN FURNITURE CO., INC.**
Starling Ave., Martinsville, Va.
Personnel: Morgan Simmons, pres.; R. L. Whitener, mgr.; W. E. Morgan, supt.; I. N. Barbour, sls. mgr.; J. L. Minter, tech. dir. & plant engr.; W. E. Oakes, sales agent.
Production: (Rated Annual Capacity) 10,000,000 sq. ft. 3/4" basis.
1959 Production: 5,200,000 sq. ft.
Rated Capacity: 60 tons daily.
Process: Lane wood extruder.
Thicknesses: 9/16"; 11/16"; 13/16" 17/16"; 19/16"; 21/16".
Spec. Gravity: .65
Colors: Light brown.
Percent Into Cut-Up Sizes: 100%.
Raw Material Used: Waste from plant.
Volume (from mill) residues: 12,400 tons.
Uses: Core stock for furniture; plywood panels.
Trade Names: Partick Board.
Percent of Product for own Use: 60%.

EXCLUSIVE
Shock absorbing neoprene cushions.

EXCLUSIVE
Floating air cylinder prevents bent rods, lengthens packing life. All air cylinders cushioned on both ends of stroke.

WHELAND'S NEW *Fast Acting* LOW MILL NIGGER

EXCLUSIVE:
Short stroke fast acting air cylinders, full oscillating. Compact rugged fabricated frame cross braced in every direction.

This is the most compact, fastest and simplest low mill air nigger yet developed. This exclusive Wheland design uses short double cushioned air cylinders in a simple, rugged and efficient linkage.

Short cylinders mean short rods, greater rod strength, faster action, increased sturdiness, less packing wear, longer life, greater dependability.

ALL air cylinders are full oscillating. They float and are cushioned at both ends of the stroke. The action is transmitted through shock absorbing neoprene cushions. This DOUBLE CUSHIONED action is another Wheland exclusive which further adds life to rods and packing.

The full universal action on sawyer control is unexcelled for ease and speed and gives full control of the log or cant. This compact, reliable, fast acting nigger has been thoroughly proved by more than a year of severe use in pine and small hardwood mills. Specifications and prices on request.

*This is NEW from Wheland but it is PROVED.*

WHELAND

THE WHELAND COMPANY
CHATTANOOGA TENNESSEE—PHONE AMherst 5-3181
MANUFACTURERS OF COMPLETE SAWMILLS AND AUXILIARY MACHINERY


**BERKLINE CORP.**
Home Address: Springfield, Mass.
Plant Address: Morristown, Tenn.
Personnel: Lester Popkin, vice pres.
Production: (Rated Annual Capacity) 1,200,000 sq. ft. 3/4 inch basis.
1959 Production: 1,200,000 sq. ft.
Rated Capacity (Tons): 5 daily.
Process: Chipcraft; Horz extrusion.
Panel Sizes: 45" wide.
Thicknesses: 5/8".
Spec. Gravity: 45#/cuff.
Percent Into Cut-Up Sizes: 100%.
Raw Material Used: Oak scraps.
Volume (from mill) residues: 1300 tons.
Uses: Furniture core stock.
Percent of Product for own Use: 90%.

**BROWNSVILLE PARTICLE BOARD AND ASSOCIATED PRODUCTS, INC.**
Brownsville, Ore.
Personnel: Joseph E. Clark, pres & mgr.; Claude Taylor and Dick Davis, foremen.
Production: (Rated Annual Capacity) 1,300,000 sq. ft. 3/4 inch basis.
1959 Production: 1,000,000 sq. ft.
Rated Capacity (Tons): 72 day basis.
Process: Dry multi platen.
Panel Sizes: 48x96 inches.
Thicknesses: 1/4 through 1 1/4 inches.
Spec. Gravity: 0.67.
Color: Natural.
Characteristics: Single aggregate particle board.
Percent Into Cut Up Sizes: None.
Raw Material Used: Planer shavings.
Uses: Underlayment; furniture core; cabinet.
Trade Names: Neopar; CFI 341; CFI 441.
Percent of Product for own Use: None.
Sales Agents: C F I Boards Inc.; Timber Products Co. of Oregon, Brownsville, Ore.

**CAROLINA FOREST PRODUCTS, INC.**
Love Grove, Box 1251, Wilmington, N. C.
Personnel: John Colucci, Jr., pres.; G. E. Kidder, mgr.; Don McCallum, supt.; Donald Fisher, tech. dir.
Production: (Rated Annual Capacity) 1,250,000 sq. ft. 3/4 inch basis.
Process: Miller-Hofft.
Panel Sizes: From 60x90 inches down.
Thicknesses: 3/8 inch through 1 1/8 inch.
Colors: Natural pine.
Characteristics: Unusually stable, very low in water absorbtion and per cent of swell; very tight machineable edge.
Percent Into Cut-Up Sizes: 50%.
Raw Material Used: Air and kiln dried pine planer shavings.
Trade Names: "Dina-Shav" (for the dinette trade); Shav-Bond (for tile underlayment).
Percent of Product for own Use: None.
Sales Agents: Carolina Pacific Sales, Inc., Wilmington, N. C.

**CAVALIER CORP.**
343 West First St., Chattanooga 2, Tenn.
Personnel: J. H. Lane pres.; M. W. Moore, mgr.; L. Picket, plant engr.
Production: (Rated Annual Capacity) 6,000,000 sq. ft. 3/4 inch basis.
1959 Production: 2,300,000 sq. ft.
Rated Capacity (Tons): 9000 daily.
Process: Miller-Hofft, multi-platen.
Panel Sizes: Trim 4x8 feet.
Thicknesses: 1/2 to 7/8 inches.
Spec. Gravity: .75.
Colors: Light wood.
Percent Into Cut Up Sizes: 40%.
Raw Material Used: Mill ends.
Uses: Furniture core stock; underlayments.
Specialty Items: Overlayment; tongue & groove.
Trade Name: Lignabond.
Percent of Product for own Use: 40%.

**CHAPWOOD INC.**
P. O. Box 606, Philomath, Oregon.
Personnel: B. N. Woods, pres.; Dan Reynolds, mgr.; Oliver Widness, supt.; Marty Lemon, sls. mgr.; Wood Processes, Oregon, Ltd., plant engrs.
Production: (Rated Annual Capacity) 8,000,000 sq. ft. 5/8 inch basis.
1959 Production: 10,000,000 sq. ft.
Process: Chapman.
Panel Sizes: 4x8 ft.
Thicknesses: 3/8; 1/2; 5/8 inches.
Spec. Gravity: .66.
Characteristics: Moisture resistant; smooth fibre face.
Raw Material Used: Planer shavings.
Uses: Underlayment; side wall; sheathing; wall board.

# GYROSET

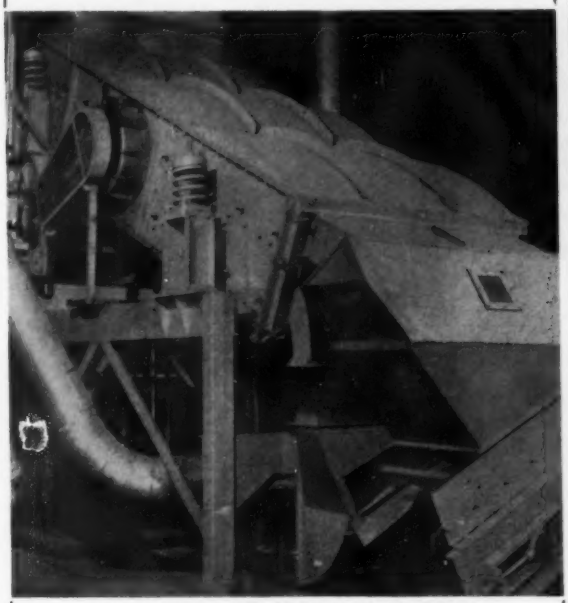
**VIBRATING SCREENS**

FOR

**DIGESTER CHIP**

**PARTICLE BOARD**

SHAVING — FLAKE — OR SPLINTER



5' x 12'—TWO DECK ENCLOSED

**AVAILABLE—3'x6' to 5'x16'**
Open or enclosed

## The POSITIVE ECCENTRIC UNIT WITH STROKE ADJUSTMENT

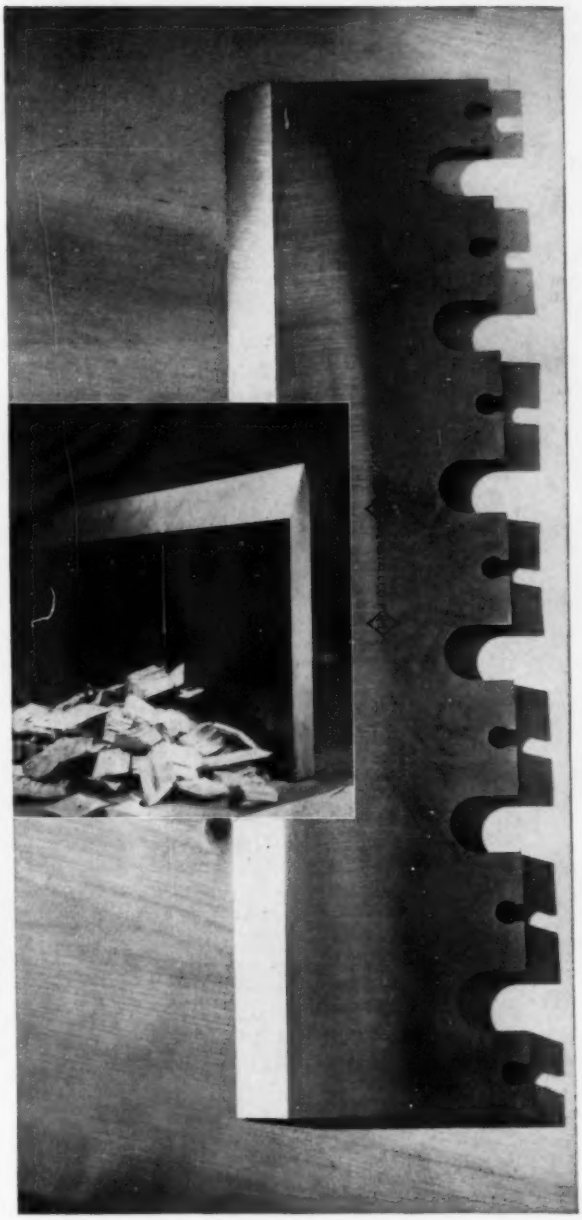
**Correct stroke length to particle length prevents upending with resultant blinding of the screen mesh.**

**Positive action 2-bearing design provides maximum capacity and efficiency. Oil splash lubrication.**

**Write for information on our list of operating installations. Representatives in all principal locations.**

**PRODUCTIVE EQUIPMENT Corp.**

2926 W. LAKE ST. • CHICAGO 12, ILL.



## QUALITY KNIVES FROM HEPPENSTALL

**HEPPENSTALL COMPANY**
PITTSBURGH 1, PENNSYLVANIA
PLANTS: Pittsburgh, Pa.
Bridgeport, Conn. • New Brighton, Pa.

**MIDVALE-HEPPENSTALL COMPANY**
NICETOWN, PHILADELPHIA 40, PA.

Die Blocks • Forgings • Back-Up Roll Sleeves • Rings
Industrial Knives • Materials Handling Equipment
Pressure Vessels • Hardened and Ground Steel Rolls
Vacuum and Consumable Electrode Melted steels

Specialty Items: Oil tempered fibre overlayment; oil tempered prefinish.
Trade Names: Fibre Clad Chapwood.
Sales Agents: Factory, Timberlane Lbr. Co.

**CHIPBOARD PRODUCTS, INC.**
123 N. E. McLearn Road, P. O. Box 7, Grants Pass, Ore.
Personnel: R. T. Moore, Jr., pres.; C. M. Starnes, mgr.
Production: (Rated Annual Capacity) 6,000,000 sq. ft. ¾ inch basis. Flakeboard.
Rated Capacity (Tons): 30 daily.
Process: Kreibaum extrusion.
Thicknesses: ½ through 1½ inches.
Spec. Gravity: 40 pound cu. ft.
Percent Into Cut Up Sizes: 99%.
Raw Material Used: Douglas fir shavings.
Uses: Furniture and door core.
Percent of Product for own Use: None.

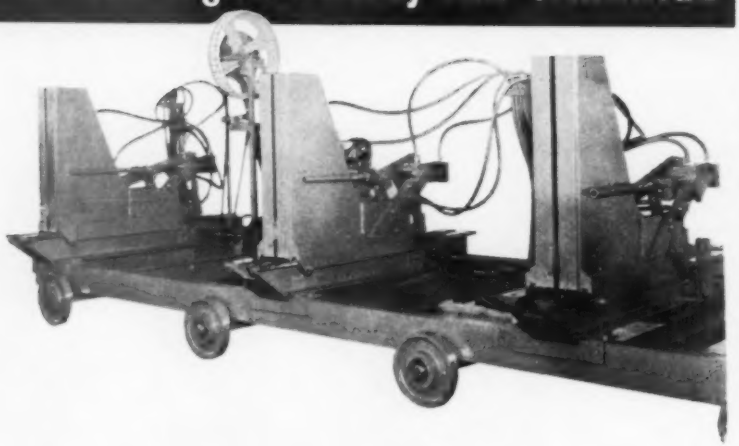
**CLEAR FIR PRODUCTS OF ORE. LTD.**
P. O. Box 188, Springfield, Ore.
Personnel: W. H. Gonyea, pres.; J. R. Nell, supt.; Jim Berwick, sls. mgr.; George Mohr, tech. dir.
Production: (Rated Annual Capacity) 4,800,000 sq. ft. ¼ inch basis.
1959 Production: 3,600,000 sq. ft. ¼ inch basis.
Panel Sizes: 48"x96".
Thicknesses: ¼ inch.
Percent Into Cut-Up Sizes: None.
Raw Material Used: Waste from door factory.
Uses: Interior paneling and underlayment.
Specialty Items: Striating; overlayment; tempering.
Trade Names: Clear-Tex and Sand-Drift.
Sales Agents: Clear Fir Sales Co., P. O. Box 188, Springfield, Ore.

**COLLINS PINE CO.**
909 Terminal Sales Bldg., Portland, Ore.
Chester, Calif.
Truman W. Collins, pres.
Plant under construction.


Corinth invites you to profit from

CONTROLLED POWER

with this high-efficiency AIR CARRIAGE



Quickly reduces labor costs

If you're looking for the best sawmill system for reducing labor costs, then investigate Corinth's new Air Carriage featuring CONTROLLED POWER. In this high-efficiency carriage, you get the perfect balance between weight and strength. Rugged enough for power log turner and high speed operation. Choice of steel or aluminum construction.

*Contact us about your sawmill needs*

CORINTH MACHINERY COMPANY
AMERICAN SAWMILL MACHINERY CO.
Corinth, Mississippi

EXPORT SALES DIVISION: 30 CHURCH ST., NEW YORK 7, N.Y.


**COLUMBIA HARDBORD CO.**
Home Address: P. O. Box 1767, Seattle 11, Wash.
Plant Address: Everett, Wash.
Personnel: F. J. Johnson, pres.; D. L. Schubert, mgr.; Marion Andrew, supt.; D. L. Johnson, sls. mgr.; Wyman Williams, tech. dir.; Francis Hoffman, plant engr.
Production: (Rated Annual Capacity) 24,000,000 sq. ft. ⅜ inch basis.
1959 Production: 25,000,000 sq. ft. ⅜ inch basis.
Rated Capacity (Tons): 80 daily.
Process: Industrial Development—Flakeboard.
Panel Sizes: 24; 25; 30; 48; 50 inches wide and any length.
Thicknesses: ¼ inch through ¾ inch.
Spec. Gravity: 42 lbs. per cubic foot.
Colors: Light brown.
Characteristics: Triplex grade has two faces of high density hardboard.
Percent Into Cut-Up Sizes: 5%.
Raw Material Used: Alder, hardwood & cedar.
Volume (from logs): All.
Uses: Anywhere interior sanded plywood is used.
Specialty Items: Overlayment; Vee groove and finish flooring; fire retardant panels any thickness.
Trade Names: Cedawood brand—two types —Standard & Triplex.

**CROSSETT LUMBER CO.**
Home Address: Crossett, Ark.
Personnel: H. S. Mersereau, mgr.
Under construction.

**DIXIE CHIPBOARD CO.**
Home Address: 427 W. Randolph, Chicago, Ill.
Plant Address: Rural Hall, N. C.
Personnel: T. J. Connelly, pres.; J. Grady Goldston, Jr., mgr. & sls. mgr.; Charles H. Pack, supt.
Production: (Rated Annual Capacity) 5,000,000 sq. ft. ¾ inch basis.
1959 Production: 4,000,000 sq. ft. ¾ inch basis.
Process: Kreibaum vertical extrusion.
Panel Sizes. Any size required.
Thicknesses: ½ to 2 inches.
Spec. Gravity: .58-.60.
Percent Into Cut-Up Sizes: 90%.
Raw Material Used: Planer shavings.
Volume (from mill) residues: 10,000 tons.
Uses: Solid board ½" to 1" cores for plywood; Tubular board 1½" to 2" for desk tops and doors.
Trade Names: Kreibaum vertical extrusion board.
Sales Agents: The Dean Co., Chicago, Ill.

**FORMICA CORP.**
Home Address: 4614 Spring Grove Ave., Cincinnati 32, Ohio.
Plant Address: Farmville, N. C.
Personnel: D. J. O'Conor, Jr., pres.; Tom J. Canning, mgr.; Charles G. Reiter, sls. mgr.
Production: (Rated Annual Capacity) 40,000,000 sq. ft. ¾ inch basis.
1959 Production: Went into production 9-1-59.
Process: Own flat platen.
Panel Sizes: 24x60 up to 72x144 inches.
Thicknesses: ⅜ to 1¼ inches.
Spec. Gravity: 0.72.
Colors: Natural pine.
Characteristics: Smooth surface, excellent internal bond, good machinability.
Raw Material Used: Pine flakes.
Uses: Principally as an underlayment for Formica and other laminates.
Trade Names: Formica Flakeboard.
Percent of Product for own Use: None.

**GRAY PRODUCTS CO., INC.**
Home Address: 4 E. Main St., Richmond, Va.
Plant Address: Waverly, Va.
Personnel: Elmon T. Gray, pres.; Charles E. Crawford, mgr.; B. Watson, supt.; J. W. Coufal, sls. mgr.; R. D. Putnam, tech. dir.; L. Pate, plant engr.
Production: (Rated Annual Capacity) 24,000,000 sq. ft. ¾ inch basis.
1959 Production: 18,000,000 sq. ft. ¾ inch basis.
Process: Multi-Platen (Miller-Hofft).
Panel Sizes: 4x8, 4x10, 5x8, 5x10 feet.
Thicknesses: ½; ⅝; ¾; ⅞; 1; 1⅛; 1 3/16 inches.
Spec. Gravity: .65.
Colors: Beige.
Characteristics: High quality surface; tight edge.
Raw Material Used: Loblolly pine pulpwood; Loblolly pine planer mill shavings.
Volume (from Mill) residues: 3000 tons; (from logs): 220,000 tons.

Vacuum and Consumable Electrode Melted steels


You don't pay the man who isn't there

Engineered to Cut Costs

CORLEY

SAWMILL MACHINERY

CORLEY MANUFACTURING CO., CHATTANOOGA, TENN.

Find out how RADER CUTS CONVEYOR COSTS

Write to: Rader Pneumatics, Inc.
1739 N. E. 42nd Ave., Portland 13, Oregon

RADER PNEUMATICS Inc.

COE VENEER MACHINERY

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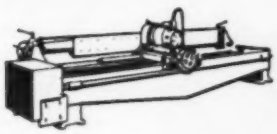
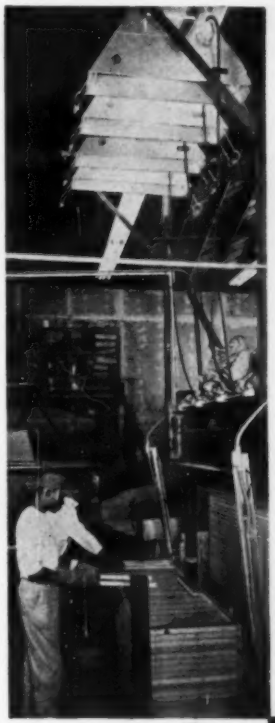
GRINDERS



The COE MFG. Co.
Painesville, Ohio



for faster, more accurate assembly

CARTER GUIDE LINE LIGHTS

The Carlow Company of Los Angeles has sharply reduced rejects while slashing assembly time for hollow core doors. Four Carter Guide Line Lights on a special new mounting bracket cast sixteen marking shadows . . . show assemblers precisely where to position cross members in frame without lost time or waste motion. The new bracket can accommodate six Carter lights to project up to 48 parallel shadow lines if desired.

Carter also offers **Band Saw Wheels**, plus the industry's most extensive line of **Band Saw Guides** with **Mounting Brackets** for virtually any machine. Write for **free catalog.**

Carter PRODUCTS COMPANY, Inc.
448 Helmer Bldg., 50 Market St.
Grand Rapids, Mich.

LOW COST FACE GRADE PRINTING
*with the*
IRVINGTON 303

Continuous or center printing; as many printer heads as needed. For slick or lug chain, manual, remote or memory control.

Since 1907

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SANTOBRITE®S is a superior product for control of sap stain and mold. It is our pelletized grade of technical sodium pentachlorophenate. The pellets are non-dusting and easily dissolved. SANTOBRITE S is warehoused in all lumber centers. Vanderbilt technical representatives are always available to help with special problems.

Write for information today.

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R. T. VANDERBILT COMPANY
SPECIALTIES DEPARTMENT
230 PARK AVENUE NEW YORK 17, N. Y.

Uses: Flakecore—core stock for dinettes, sink tops; furniture.
Trade Names: Graco Flakecore; Graco Particle board.

**HART WOOD PRODUCTS**
Box 27, Hart, Mich.
Personnel: W. Lionel Tate, pres.; T. Alden Wiedman, supt. & plant engr.; Lorne Farley, sls. mgr.
Production: (Rated Annual Capacity) 3,000,000 sq. ft. ¾-inch basis.
1959 Production: 1,500,000 sq. ft.
Rated Capacity (Tons) 8 tons daily.
Process: Vertical extruded Hart particle board.
Panel Sizes: 4x4 through 4x12 feet.
Thicknesses: 1½; 1⅝; 1¾ inches.
Spec. Gravity: .72.
Colors: Brown.
Raw Material Used: 75% aspen; 25% maple.
Volume (from Mill) residues: 400 tons; (from logs): 2000 tons.
Uses: Core for veneered panels, cupboard doors; closet doors; furniture panels.
Specialty Items: Prefinish; railing; veneering.
Trade Names: The Hart Line; Hart Board.
Percent of Product for own Use: 95%.

**HASKINS WOOD PRODUCTS**
Swisshome, Oregon.
Personnel: R. E. Haskins, mgr.; Claude Taylor, supt.; Jay Schack, sls. mgr.; James Johnson, tech. dir.; Cecil Carter, plant engr.
Production: (Rated Annual Capacity) 22,000,000 sq. ft. ½, ¾, ⅜ and ⅝ inch basis.
1959 Production: Started Feb. 1960.
Rated Capacity (Tons) 135 daily.
Process: Multi-Platen.
Panel Sizes: 48x96 inches.
Thicknesses: 5/16 to ¾ inches.
Colors: Natural wood (fir).
Characteristics: Close tolerance on density and good surface.
Raw Material Used: Douglas fir.
Volume (from Mill) residues: Total.
Uses: Underlayment; cabinet; sheathing; core stock; furniture.
Trade Names: Unipar; Tripar.

**INTERNATIONAL PAPER CO., Long-Bell Div.**
Home Address: New York, N. Y.
Plant Address: Longview, Wash.
Personnel: R. C. Doane, pres.; T. A. Deal, mgr.; W. R. Kletsch, supt.; O. D. Harrington, sls. mgr.; A. L. Mottet, tech. dir.
Production: (Rated Annual Capacity) 20,000,000 sq. ft. ¼ inch basis.
1959 Production: 5,000,000 sq. ft. ¼ inch basis.
Rated Capacity (Tons) 50 daily.
Process: Long-Bell Crosscut flake process.
Panel Sizes: 4x8 feet and smaller cut sizes.
Thicknesses: 3/32 to ¾ inch.
Spec. Gravity: 0.5 to 1.0.
Colors: Natural wood color: pine, cedar, fir, maple.
Characteristics: High dimensional stability and warp resistance; high flexural modulus of rupture and internal bond; high machinability and gluability.
Percent Into Cut-Up Sizes: 7%.
Raw Material Used: Planer ends, slabs, edgings.
Uses: Wall paneling; furniture manufacture; miscellaneous construction and industrial use.
Specialty Items: Tongue and groove; tile and plank; fancy veneer faces.
Trade Names: Flakewood; Ven-O-Wood; Flakewall.
Percent of Product for own Use: 50%.

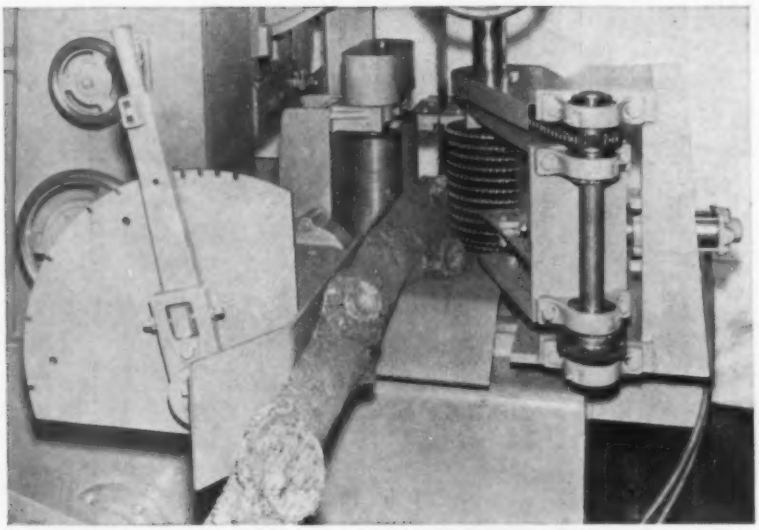
**JASPER-AMERICAN MFG. CO.**
Home Address: Jasper Corp., Jasper Ind.
Plant Address: Henderson, Ky.
Personnel: Arnold F. Habig, pres.; Nestor Kuper, mgr.; Dick Lampert, sls. mgr.
Production: (Rated Annual Capacity) 5,000,000 sq. ft. ¾ inch basis.
1959 Production: 3,500,000 sq. ft. ¾ inch basis.
Rated Capacity (Tons) 25 daily.
Process: Kreibaum vertical extrusion.
Panel Sizes: Cut to size.
Thicknesses: 9/16 to 1-3/16 inch solid; 1⅛ to 1⅞ inch tubular.
Spec. Gravity: .65.
Characteristics: Vertically oriental chips.
Percent Into Cut-Up Sizes: 100%.
Raw Material Used: Pine chips.
Volume (from Mill) residues: 7500 tons annually.
Uses: Core material.
Trade Names: Stylemaster.
Percent of Product for own Use: 60%.

**KROEHLER MFG. CO.**
Home Address: Naperville, Ill.
Plant Address: Meridian, Miss.
Personnel: D. L. Kroehler, pres.; Fred L. Meyers, mgr.; Walter Johnson, supt.; C. C. Stewart, tech. dir.; E. J. McFarland, plant engr. (See complete listing under Hardboard Plant).

**THE LANE CO., INC.**
Altavista, Va.
Personnel: H. O. Powell, pres.; E. H. Lane, Jr., gen. mgr.; F. T. Holland, plant mgr.; E. W. Davidson, tech. dir.; E. A. West, plant engr.
Production: (Rated Annual Capacity) 6,000,000 sq. ft. ¾ inch basis.
1959 Production: 4,000,000 sq. ft.
Rated Capacity (Tons): 25 daily.
Process: Lanewood process extruded core.
Panel Sizes: Continuous sheet 4 feet wide.
Thicknesses: 9/16 to 21/16 inches.
Spec. Gravity: .65.
Colors: Various species.
Characteristics: Extruded core with excellent properties for core stock.
Percent into Cut-Up Sizes: 100%.
Raw Material Used: Dried mill waste.
Volume (from mill residues) 7250 tons (based on 250 days).
Uses: Core stock for furniture.
Trade Name: Lanewood.
Percent of Product for own Use: 100%.

**LESTER CEDAR PRODUCTS**
1702 E. 18th Ave., Box 637, Sweet Home, Ore.
Personnel: Mel Lester, pres., mgr. & sls. mgr.; Cecil Bridge, supt. and plant engr.
Production: (Rated Annual Capacity) 9,000,000 sq. ft.
1959 Production: To be in Operation April, 1960.
Rated Capacity (Tons) 45 per day on ¾ inch basis.
Process: Flakeboard.


# New STUB LINEBAR RESAW



## NOW...INSTALL ONE LOW COST RESAW...
### Resaw slabs, small split logs, flitches and cants

Even the roughest slabs feed through the saw without slipping or stalling.

Two power driven fence rolls and an 11″ diameter power driven pivoting press roll that is tensioned by an air cylinder make easy work of feeding the roughest stock. Built-in slab table prevents feather edge slabs and flitches from hanging up.

Full range set lever opens fence to maximum of 6″ inside saw line. Pivoting press roll opens to 12″ outside saw line through foot operated air valve. Maximum depth of cut is 22″. Feedworks is integral part of machine.

Five speed transmission drives feedworks from lower shaft eliminating separate expensive variable speed mechanism.

Rugged McDONOUGH construction throughout insures accuracy and long life. Available with 54″, 62″ or 6′ wheels in right or left hand. Tilting feedworks and center sawing mechanism available as extra accessories.

*WRITE for this booklet full of practical ideas*

The Role of the RESAW in the Modern Sawmill

**For complete details of the NEW McDONOUGH Stub Linebar Resaws ask your McDONOUGH dealer or write for Bulletin SLB-54-1.**

WORLD'S LARGEST PRODUCER OF BAND RESAWS

**McDONOUGH MFG. CO.**
1502 GALLOWAY • EAU CLAIRE, WISCONSIN

Panel Sizes: 5x10 feet.
Thicknesses: ⅛ up to 1¼ inch.
Colors: Natural.
Characteristics: Will not warp; screw holding good.
Percent Into Cut-Up Sizes: 40%.
Raw Material Used: Cedar, alder, maple.
Volume (from Mill residues) 15 tons; (from logs) 30 tons.
Uses: Shelving; paneling; cabinets; furniture; home flooring; industrial flooring; overlayment.
Specialty Items: Striating; overlayment; prefinish.
Trade Names: Cedawood.
Sales Agents: Columbia Sales, Seattle, Wash.

**MacMILLAN, BLOEDEL AND POWELL RIVER LIMITED**
Home Address: Vancouver, B. C.
Plant Address: New Westminster, B. C.
Personnel: M. J. Foley, pres.; C. A. Henry, mgr.; R. C. Hughes, prod. mgr.
Production: (Rated Annual Capacity) 22,500,000 sq. ft. ⅜ inch basis.
In Production April, 1960.
Rated Capacity (Tons) 100 daily.
Panel Sizes: 4x8 feet.
Thicknesses: ¼ to ¾ inch.
Spec. Gravity: 0.60.
Raw Material Used: Western Red cedar.
Specialty Items: Factory filled prefinish.
Trade Names: Powell River Engineered Flakeboard.
Percent of Product for own Use: None.

**MAYO LUMBER CO., LTD.**
Home Address: Paldi, B. C.
Plant Address: Nanaimo, B. C.
Personnel: R. S. Mayo, pres.
Under construction (Fall, 1960).
Process: Kriebaum.
Panel Sizes: 4x8 and 6x10 feet.
Thicknesses: ⅝ to 5 inches.
Raw Material Used: Wood chips.
Specialty Items: Overlayment.

**MISSISSIPPI PRODUCTS, INC.**
P. O. Box 492, Jackson, Miss.
Personnel: G. A. Huth, pres.; G. F. Bracken, mgr.; C. B. Ryan, sls. mgr.; John E. Griffith, tech. dir.; G. H. Robinson, plant engr.
Production: (Rated Annual Capacity) 2,080,000 sq. ft. ⅞ inch basis.
1959 Production: 1,789,038 sq. ft.
Rated Capacity (Tons) 11.2 (1 shift).
Process: Own—Multiplaten.
Panel Sizes: 4x8 feet.
Thicknesses: ⅞ inch.
Spec. Gravity: .7.
Colors: Natural light tan.
Percent Into Cut-Up Sizes: 100%.
Raw Material Used: Southern hardwoods.
Volume (from Mill) residues 2,563 tons.
Uses: Core stock.
Trade Names: Nu-Tex.
Percent of Product for own Use: 100%.

**NATIONAL STARCH & CHEMICAL CORP.**
Home Address: New York, N. Y.
Plant Address: Goffstown, N. H.
Personnel: D. D. Pascal, pres.; A. G. Battaglia, mgr.; W. Grubman, supt.
Production: (Rated Annual Capacity) 15,000,000 sq. ft. ¾ inch basis.
Process: Columbia Engr.
Panel Sizes: 4x8 and 5x8 feet.
Thicknesses: ⅜ to 1⅛ inches.
Spec. Gravity: .65 and .70.
Percent Into Cut-Up Sizes: 50%.
Raw Material Used: Eastern white pine.
Uses: Core stock; floor underlayment.
Trade Names: Granite Board.

**NATIONAL STARCH & CHEMICAL CORP.**
**(Formerly American Parboard Co.)**
Home Address: New York, N. Y.
Plant Address: Black Mountain, N. C.
Personnel: D. D. Pascal, pres.; A. G. Battaglia, mgr.; W. Grubman, supt.
Production: (Rated Annual Capacity) 10,000,000 sq. ft. ¾ inch basis.
Process: Miller-Hofft.
Panel Sizes: 4x8 and 5x8 feet.
Thicknesses: ⅜ to 1⅛ inches.
Spec. Gravity: .65 and .70.
Percent Into Cut-Up Sizes: 50%.
Raw Material Used: Appalachian hardwoods.
Uses: Core stock; floor underlayment.
Trade Names: ParFlake.
Percent of Product for own Use: None.

**PACQUA, INC.**
P. O. Box 78, Dillard, Ore.
Personnel: William E. Forrest, pres.; William Cooke, mgr.; Ron Frashour, asst. mgr.; Frank Kern, supt.; John Longfellow, gen. sls. mgr.; William Gray, asst. gen. sls. mgr.; Jack Gumm, sls. engr.
Production: (Rated Annual Capacity) 50,000,000 sq. ft. ⅜ inch basis.
1959 Production: 36,000,000 sq. ft.
Rated Capacity (Tons) 125 of product.
Process: Hot platen, own design process.
Panel Sizes: 48x96; 49x97; 49x98 inches; cut up.
Thicknesses: ¼; 5/16; ⅜; ½; ⅝; ¾; ⅞; 1 in.
Spec. Gravity: 40 to 60 lbs. per ft.
Colors: Natural wood light color.
Characteristics: Uniform density; smooth sanded; decorative; exterior; termite resistant.
Percent Into Cut-Up Sizes: 10%.
Raw Material Used: Douglas fir.
Volume (from Mill) residues 70,000 tons annually; (from logs) up to 5,000 hardwood.
Uses: Core material; underlayment; siding; paneling; cabinet work; sheathing; roof decking; flooring.
Specialty Items: Embossing; V-groove; hardwood overlayment; bar-tile block flooring; cut to size; fill and prefinish; fungus and termite proofing.
Trade Names: Parwood; Partile; Pardelux; Partex, IRB, 3-D, Duo-Faced.
Percent of Product for own Use: 10%.
Sales Agents: Plywood Service Inc.

**PACK RIVER LUMBER CO.**
205 Church St., Sandpoint, Idaho.

**POINSETT LUMBER & MFG. CO.**
Home Address: The Singer Mfg. Co., New York, New York.
Plant Address: Truman, Ark. (formerly at Pickens, S. C.)
Will be in operation in April, 1960.
Personnel: E. J. Stanley, supt. of prod. engr. dept.

**POPE & TALBOT**
Home Address: San Francisco, Calif.
Plant Address: Oakridge, Ore.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**875 WEST BROADWAY**
**VANCOUVER, B. C.**

**585 EAST 19th ST.**
**EUGENE, OREGON**


Personnel: George Pope, Jr., pres.; J. Snyder, mgr.; R. Peinecke, supt.; L. Sters, sls. mgr.
Production: (Rated Annual Capacity) 12,000,000 sq. ft. ¾ inch basis.
1959 Production: 11,500,000 sq. ft.
Rated Capacity (Tons) 70 daily.
Process: Miller-Hofft.
Panel Sizes: Up to 54x144 inches.
Thicknesses: ¼ to 1⅛ inches.
Colors: Natural.
Percent into Cut-Up Sizes: 30%.
Raw Material Used: Planer shavings and specially prepared flakes.
Uses: Construction and industrial.
Characteristics: Products tailored for specific uses.
Specility Items: Pre-filled.
Trade Names: Customboard.
Percent of Product for Own Use: None.

**ROCK ISLAND MILLWORK CO.**
Rock Island, Ill.
Personnel: E. R. Titcomb, pres.; E. A. Gerber, vice pres. & gen. mgr.; H. S. Kettrick, sls. mgr.; David Halle, plant mgr.
Production: (Rated Annual Capacity) 32,000,000 sq. ft. ⅛ inch basis.
1959 Production: 28,000,000 sq. ft.
Rated Capacity (Tons) 50 daily.
Process: Resinwood.
Panel Sizes: 4x8 feet.
Thicknesses: ¼; 9/32; ⅜; ½ inches.
Spec. Gravity: 1.0.
Colors: Natural pine.
Characteristics: Fine aggregate—all but eliminates "telegraphing."
Percent Into Cut-Up Sizes: 10%.
Raw Material Used: Millwork offal and phenolic resin.
Uses: Core for high pressure laminates; bench top covering.
Trade Names: Resinwood; Resincore.
Percent of Product for own Use: 5%.

**RODDISCRAFT INC.**
P. O. Box 248, Arcata, Calif.
Personnel: C. H. Blanchar, pres.; K. R. Cooper, vice pres. Western Operations; R. K. Molloy, mgr. Timblend Div.; Roy Hunt, Supt.; Richard L. Rinde, sls. mgr.; W. H. Ferry, tech. dir.
Production: (Rated Annual Capacity) 30,000,000 sq. ft. ¾ inch basis.
1959 Production: 30,000,000 sq. ft.
Rated Capacity (Tons) 95 tons.
Process: Behr.
Panel Sizes: 51x192 inches.
Thicknesses: ⅜ to 1½ inches.
Spec. Gravity: .63.
Colors: Tan.
Raw Material Used: Douglas fir.
Uses: Fine furniture; case goods; cabinets; plastic underlayment; highway signs; hardwood paneling; underlayment; fire retardant core for hardwood paneling; exterior siding.
Specialty Items: Overlayment.
Trade Names: Timblend and Phenolic (Ext.) Timblend.
Sales Agents: Roddis Plywood Corp.

**SOUTHERN PLASWOOD CORP.**
P. O. Box 123, Hope, Ark.
Personnel: W. W. Hollowell, pres.; E. J. Ogran, mgr.; Guy Hicks, supt.; C. Stuart, tech. dir.; R. L. Campbell, plant engr.
Production: (Rated Annual Capacity) 14,000,000 sq. ft. ¾ inch basis.
Rated Capacity (Tons) 80 daily.
Process: Plaswood hot platen—multiple OPG.
Panel Sizes: 48½x98 inches.
Thicknesses: ⅜ to 1½ inches.
Percent Into Cut-Up Sizes: 40%.
Raw Material Used: Yellow pine.
Uses: Furniture cores; plastic laminate base.
Trade Names: Plaswood Korstock; Plaswood Underlay.
Percent of Product for own Use: None

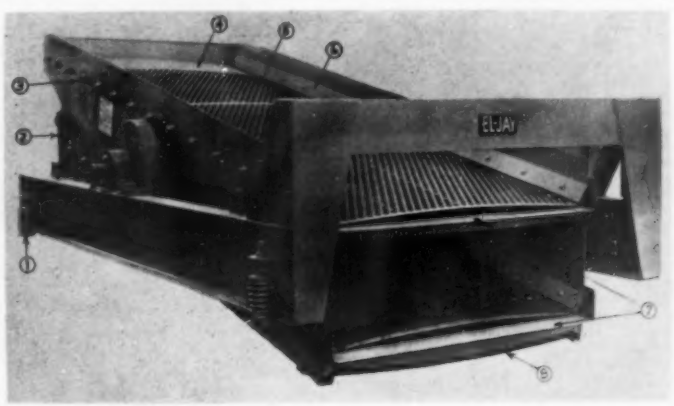
**SUPERWOOD CORP.**
Duluth, Minn.
Personnel: M. J. Opsahl, pres.; K. V. Hafner, mgr.; Geo. Jondal, supt.; Robt. Stephany, sls. mgr.; Geo. C. Fewson, tech. dir.
Production: (Rated Annual Capacity) 10,800,000 sq. ft. ½ inch basis.
Production started April, 1960.
Process: Platen pressed.
Panel Sizes: 4x8 feet.
Thicknesses: ⅝ inch.
Trade Names: Multiply.

**SWAIN INDUSTRIES, INC.**
West Second St., Seymour, Ind.
Personnel: F. W. Bottorff, pres.; D. B. Swain, vice pres.; Paul Aikman, supt.; L. C. Moore, sec.; L. J. Heyne, treas.
Production: (Rated Annual Capacity) 7,000,000 sq. ft. ½ inch basis.
Rated Capacity (Tons) 36 daily.


**Screen chips the smooth way**

# EL-JAY

EL-JAY design has proved itself in all types of wood chips in Oregon, Washington, Idaho and Montana and on into the south from Texas to Georgia. EL-JAY designed machines are built to our standards in Canada, too, by a competent licensee.




## CHECK THESE FEATURES:

1. Coil Springs with leveling screws are used at each corner to stop any transmission of vibration between the machine and its supporting structure.
2. Adjustable connecting links make possible quick and easy change of screen incline should it ever become necessary. Torsion bar stabilizers insure uniform circle motion over the entire screening area. El-Jay screens will operate efficiently at a flatter angle than any other circle throw screen.
3. Self aligning drawbolt washers prevent bending of the drawbolts.
4. Wide feed plate receives the chips and starts them out in a flat position onto the screening area.
5. Punch plate or woven wire screen may be used with equal facility. The slight crown eliminates flexing of the screening surface and helps spread the material.
6. Quick detachable draw plates firmly tension screen plates. By merely loosening drawbolt nuts a few turns screen plates may be withdrawn or inserted from either end. Drawbolts are locked against turning so need not be held when turning nuts.
7. Unobstructed discharge provides wide area of discharge: however, chutes of various contours may be factory installed.
8. Optional fines pan collects dust and conveys it to a discharge opening a few inches back from acceptable chip discharge.

**Screens available in sizes 3'x6' to 5'x14' or built to special requirements**

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*Write for descriptive folder & names of users.*

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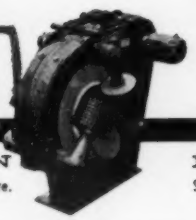
*When you know the facts about barking you'll choose a* **CAMBIO**

8" 14" 21" 26" 35" 43"



Now announcing the new **50" MODEL** Designed for West Coast timber

SODERHAMN MACHINE MFG. CO.

9442 S.W. Barbur Blvd., Portland Ore. Soderhamn, Sweden • Talladega, Ala.


Process: Own.
Panel Sizes: 30x108 and 48x96 inches.
Thicknesses: ⅜ to 1¼ inches.
Spec. Gravity: 0.55-0.76.
Colors: Multicolored by wood species.
Percent Into Cut-Up Sizes: 90%.
Raw Material Used: Mixed hardwoods plus small percent pine.
Uses: Moulded chairbacks; chairbacks and chair seats shaped to pattern.
Trade Names: Trimwood.
Sales Agents: Illinois Fibre & Specialty Co.

### THOMASON CHIPBOARD CO.

Fayetteville, N. C.
Personnel: B. H. Thomason, Jr., Pres.; J. A. Barnes, mgr.
Production: (Rated Annual Capacity) 4,000,000 sq. ft.
Process: Vertical extrusion.
Panel Sizes: 48 inches wide to 12 feet long.
Thicknesses: 1⅛ to 1-9/16 inches.
Raw Material Used: Pine chips.
Percent of Product for own Use: 100%.

### TRAFALGAR MILLS LIMITED

South Nelson, New Brunswick, Canada.
Personnel: J. Leonard O'Brien, pres.; J. J. Sutherland, mgr. & sls. mgr.; R. A. Cameron, Supt. & plant engr.
Production: (Rated Annual Capacity) 18,000,000 sq. ft. ½ inch basis.
Process: Plaswood.
Panel Sizes: 48x96 inches and cut to size.

### U. S. KORBOARD

120 Wall St., New York, N. Y.
Personnel: Sidney Horne, mgr.; Matt Faussner, supt.; Henry S. Lynn, sls. mgr.
Production: (Rated Annual Capacity) 25,000,000 sq. ft. ¾ inch basis.
Process: Korboard, horizontally extruded board.
Panel Sizes: 4 feet and any length.
Thicknesses: ½ to 2 inches.
Spec. Gravity: Various .60; .53; .50.
Characteristics: Good screw holding; good gluing.
Percent into Cut-Up Sizes: 50%.
Raw Material Used: Fir, aspen, poplar.
Uses: Furniture, doors.
Trade Names: Korboard.

### UNITED STATES PLYWOOD CORP.

Home Address: New York City, New York
Plant Address: P. O. Box 1688, Redding, Calif.
Personnel: S. W. Antoville, chmn. of bd.; G. C. Brewer, pres. (New York office) W. C. Smith, mgr. particle board operation; D. N. McClary, mgr.; M. Fuller and R. Moehl, supt.; L. H. Boudreau, sls. mgr.; B. R. Jones, tech. dir.; V. E. Daniels, plant engr.
Production: (Rated Annual Capacity) 270,000,000 sq. ft. ⅜ inch basis.
1959 Production: 195,000,000 sq. ft.
Process: Novoply—3 ply.
Panel Sizes: 6x12 and 4x16 feet.
Thicknesses: ⅜ to 1¾ inches inclusive.
Spec. Gravity: .62 to .71 (lower densities in panels over 1¼").
Colors: Douglas fir color.
Characteristics: Attractive mosaic surface appearance; very flat—warp free; high strength; water resistant. Also ideal as core stock without crossbanding. Many uses overlaid one side only.
Percent Into Cut-Up Sizes: 65%.
Raw Material Used: Douglas fir; White fir; Ponderosa pine; Southern pine; chips for core; Douglas fir peeler core for face shavings.
Volume (from mill) residues: 42,200 tons; 9,480 tons from peeler cores.
Uses: Building construction (interior); sliding doors; folding doors; wall paneling; single wall partitions; furniture (as core stock and natural); sinks; desks.
Specialty Items: Prefilling; cut to size; edgebanding; edge machining; predrilling.
Trade Names: Novoply.
Sales Agents: United States Plywood branches.

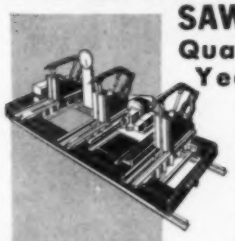
### UNITED STATES PLYWOOD CORP.

Home Address: New York City, New York.
Plant Address: P. O. Box 108, South Boston, Va.
Personnel: S. W. Antonville, Chmn. of board; Gene C. Brewer, pres. (New York office) Warren C. Smith, mgr. of Particle Board operations; Richard M. Bailey, res. mgr.; Neal Beatty, supt.; Lou Boudreau, sls. mgr.; Charles Gersbach, plant engr.
Production: (Rated Annual Capacity) 60,000,000 sq. ft. ⅜ inch basis.
1959 Production: To be completed December 1960.


# NORTHEAST

## SAWMILL EQUIPMENT

**Quality Constructed for Years of Rugged Use**



AUTOMATIC SCREW-BLOCK CARRIAGES

Whether your requirements call for a single piece of equipment or a complete sawmill, our newly designed line of NORTHEAST sawmill machinery gives you a competitive advantage. Modern engineering features make faster, more accurate lumber production possible. You achieve maximum utilization of material and are assured greater profits. Look to NORTHEAST for the latest developments in sawmill equipment.

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## You CAN finish these (and many more) WITH

**Steinemann**

*Pressure Curtain Coater*

Steinemann's tiltable transport "opens up" otherwise shielded areas of profiles—makes possible all curtain coater advantages, including material savings of 40% to 60%, even with the following products:

- **Exterior, interior siding**
- **Molding, dimension stock**
- **Picture frames**
- **Extruded aluminum, light steel shapes**

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**Phone WH 8-4555 Box 3897L, Memphis, Tenn.**
Send details on Steinemann *Pressure Curtain* Coater to:
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Process: Novoply.
Panel Sizes: 5x16 feet.
Thicknesses: 3/8 to 1 3/16 inches.
Spec. Gravity: 0.660.
Colors: Southern pine.
Characteristics: Three ply.
Percent Into Cut-Up Sizes: Unknown.
Raw Material Used: Southern pine.
Volume: 45,000 cords pulp logs per year.
Uses: Dinettes; doors; sinks; etc.
Trade Names: Novoply.

**VIKO CORP.**
Home Address: T. Baumritten Corp., New York, New York.
Plant Address: Eldred, Pa.
Personnel: W. J. Kranz, pres.
1959 Production: 1,500,000 sq. ft. 5/8 inch basis.
Process: Kriebaum extruded.
Panel Sizes: 48 inches wide—multiple lengths.
Thicknesses: .625.
Spec. Gravity: 42# Cu. ft.
Colors: Light.
Characteristics: Large particle.
Percent Into Cut-Up Sizes: 100%.
Raw Material Used: Hardwoods & softwoods.
Uses: Core board.
Specialty Items: Overlayment.
Percent of Product for own Use: 100%.

**WABASH SCREEN DOOR CO., THE**
Home Address: 310 S. Michigan, Chicago, Ill.
Plant Address: 2222 S. E. Elm St., Minneapolis, Minn.
Personnel: E. W. Donahue, pres.; W. H. Rundquist, mgr.; R. Knutson, supt.; R. J. Donahue, sls. mgr.; D. E. Westling, plant engr.
Production: (Rated Annual Capacity) 4,000,000 sq. ft. 3/4 inch basis.
1959 Production: 1,500,000 sq. ft.
Rated Capacity (Tons): 11 daily.
Process: Miller-Hofft.
Panel Sizes: 5½ x 6 feet.
Thicknesses: 1/4 to 3/4 inches.
Spec. Gravity: .70.
Characteristics: Good all-around with finer chips and less telegraphing.
Percent Into Cut-Up Sizes: 30%.
Raw Material Used: Ponderosa pine chips and 65% solids, UF resin.
Volume (from mill) residues: 2750.
Uses: Furniture corestock; cupboard doors.
Trade Names: Wabash Wood Particle Board.
Percent of Product for own Use: 30%.

**WEST VIRGINIA PULP & PAPER**
**Building Boards Div.**
Home Address: 230 Park Ave., New York, N. Y.
Plant Address: Tyrone, Pa.
Personnel: David Luke, Jr., pres.; J. Lynne Ferner, mgr.; John W. Churchill, supt.; John W. Holdsworth, sls. mgr.; Charles R. Morchauser, tech. dir.; John Crist, plant engr.
Production: (Rated Annual Capacity) 18,000,000 sq. ft. 3/4 inch basis.
Process: Flat platen type (No specific process).
Panel Sizes: 4 x 8 feet.
Thicknesses: 3/8; 1/2; 5/8; 11/16; 3/4; 1; 1 1/8 inches.
Spec. Gravity: .63.
Colors: White.
Characteristics: Tight smooth edges; high MOE and light weight.
Percent Into Cut-Up Sizes: 10%.
Raw Material Used: Aspen.
Volume (from logs): 3000 cords per month.
Uses: Furniture core; plastic laminate cores; closets; store fixtures; etc.
Specialty Items: Overlayment.
Trade Names: Westvaco core; Westvaco Phenol Paper Overlay; Westvaco Birch Overlay.
Percent of Product for own Use: None.

**WESTERN PANEL INC.**
1400 18th Ave., Sweet Home, Ore.
Personnel: W. Allen Wodtli, pres.
Production: (Rated Annual Capacity) 6,000,000 sq. ft. 3/8 inch basis.
1959 Production: 3,123,000 sq. ft.
Process: Chapman.
Panel Sizes: 4x8 feet.
Thicknesses: 1/2; 5/8; 3/4 inches.
Raw Material Used: Planer shavings.

**WEYERHAEUSER CO.**
**Silvatek Div.**
Home Address: Tacoma, Wash.
Plant Address: North Bend, Ore.
Personnel: Norton Clapp, pres.; R. D. Pauley, mgr.; C. Goll, supt.; D. C. Greeley, sls. mgr.; A. M. Fisken, mgr. of mfg.; Howard Carrels, plant engr.
Production: (Rated Annual Capacity) 12,000,000 sq. ft. 3/4 inch basis.
Process: Miller-Hofft multi-platen.
Panel Sizes: 4x8 foot.
Thicknesses: 3/8; 1/2; 5/8; 3/4; 1 inch.
Spec. Gravity: .64.
Colors: Natural light, uniform.
Characteristics: Uniform, sanded 2 sides; hard; dense panel; warp resistant; moisture resistant.
Raw Material Used: Green shavings.
Uses: Floor underlayment; core stock; cabinet work; furniture manufacturing.
Trade Names: Versabord.
Sales Agents: Silvatek Division of Weyerhaeuser Company and authorized distributors, nationwide.

**WEYERHAEUSER CO., United Wood Corp. (Subsidiary)**
Home Address: Tacoma, Wash.
Plant Address: West Memphis, Ark.
Personnel: J. L. Aram, pres.; Merlyn Hemphill, mgr.; Leonard Mahoney, supt.; Paul Kay, sls. mgr.
Production: (Rated Annual Capacity) 9,000,000 sq. ft. 3/4 inch basis.
Process: Multi-platen.
Panel Sizes: 56x96 and 56x98 inches.
Thicknesses: 1/2; 5/8; 3/4; 1 inch.
Spec. Gravity: .64.
Colors: Light tan.
Characteristics: Strong, smooth surface; tight edge; light weight; light color; excellent machinability.
Uses: Veneering; laminating; furniture manufacturing; floor underlayment.
Specialty Items: Veneer overlayment.
Trade Names: Versaflake; Versabase.
Sales Agents: Silvatek Division of Weyerhaeuser Company and authorized distributors, nationwide.

**WILLAMETTE FIBRE & CHIPBOARD INC.**
Box 516, Sweet Home, Ore.
Personnel: John Tyner, pres. & mgr.; Bill Kemper, supt.
Production: (Rated Annual Capacity) 48,000,000 sq. ft. 1/8 inch basis.


# NEW LONG-BELL FLAKEBOARDS

International Paper Company's Long-Bell Division will soon complete a modernization and expansion program at its Longview, Washington, flakeboard plant . . .

*and will make industry news with:*

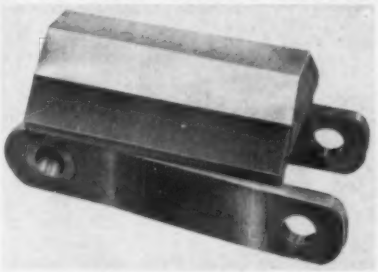
**Best available production equipment**
**Highest standards of board quality**
**Increased variety of superior board products**

**FLAKEWOOD®** **VEN-O-WOOD®** **FLAKEWALL™**

and fine flakeboards tailored for exacting industrial and commercial requirements

*write . . wire . . phone* **INTERNATIONAL PAPER COMPANY**
**LONG-BELL DIVISION**
**LONGVIEW, WASHINGTON**

Now! PORTALLOY rubber camel back chain for use in selective transfer handling



Ask for details about this chain and all PORTALLOY standard chains, also rubber covered rolltop

**Special Non-Marking White Rubber Is Used To Eliminate Bruising**

**The Rubber Is An Integral Part of Chain**

NOT AN ATTACHMENT

- WILL STAND TOUGH WEAR
- ELIMINATES DOWN GRADING
- COMES IN STANDARD H-78 AND H-138 CHAIN ON THE FAMOUS PORTALLOY STEEL QUALITY CHAIN

**PORTLAND CHAIN MANUFACTURING CO.**

IN THE HEART OF THE LOGGING INDUSTRY

4000 N.W. Yeon • Portland, Oregon • CApitol 8-9219


1959 Production: 49,000,000 sq. ft.
Rated Capacity (Tons): 60 daily.
Panel Sizes: 48x96 and 49x96 inches.
Spec. Gravity: .67—.70.
Raw Material Used: Fir Planer shavings.
Uses: Underlayment.
Specialty Items: Overlayment; tile.
Trade Names: West Wood.
Sales Agents: Wood Products.

**WOODCORE, INC.**

Box 45, Scottdale, Pa.
Personnel: Irving L. Halsted, pres.; Kenton J. Halsted, mgr.
Production: (Rated Annual Capacity) 3,000,000 sq. ft.
Process: Chipcraft vertical extrusion.
Panel Sizes: 4 feet wide up to 12 feet long.
Thicknesses: ½ to 1¼ inches.
Percent Into Cut-Up Sizes: 40%.
Raw Material Used: Oak chips.
Uses: Core stock; underlayment.
Trade Names: Scotbord.
Percent of Product for own Use: None.

**WOOD FIBREBOARD CO.**

Home Address: Portland, Ore.
Plant Address: Albany, Ore.
Personnel: William Swindells, pres.; Irvin J. Wentworth, prod. mgr.; Milton Clifford, supt.; W. A. Affolter, sls. mgr.
Production: (Rated Annual Capacity) 30,000,000 sq. ft. ¾ inch basis.
1959 Production: To start production about June 1, 1960.
Rated Capacity (Tons): 125 daily.
Process: Bison system; air flotation.
Panel Sizes: 5'x16' maximum.
Thicknesses: ⅜; ½; ⅝; ¾; 1⅛ inches.
Spec. Gravity: Medium density.
Colors: Natural.
Characteristics: Smooth surface; high dimensional stability.
Raw Material Used: Planer shavings and flakes.
Volume (from mill) residues: All.
Uses: Underlayment; furniture core; cabinet stock; door stock.
Trade Names: Fla-Kor.
Percent of Product for own Use: None.

**WYNNEWOOD PRODUCTS CO.**

303 Tena St., Jacksonville, Tex.
Personnel: Angus G. Wynne, Jr., pres.; K. N. Stordalen, gen. mgr.; Wayne Cain, supt.; Earl H. Williams, sls. mgr.; R. R. Bridges, tech. dir.
Production: (Rated Annual Capacity) 12,000,000 sq. ft. ⅜ inch basis.
Rated Capacity (Tons): 80 daily.
Process: Platen.
Panel Sizes: 4'x8'.
Thicknesses: ⅜ to 1¼ inches.
Spec. Gravity: 40, 50 & 60 lbs./ cubic foot.
Colors: Light.
Percent Into Cut-Up Sizes: 50%.
Raw Material Used: Southern pine.
Volume (from mill) residues: 24,000 tons.
Uses: School and church furniture; dinette furniture and building.
Specialty Items: Termite; decay & mildew.
Trade Names: Corstoc; Arcatex; Wynnewood 601 and Wynnewood 60F.
Percent of Product for own Use: None.
Sales Agents: L-M Forest Products; American Wood Products Sales Co.; Damiani Plywood-Lumber Co.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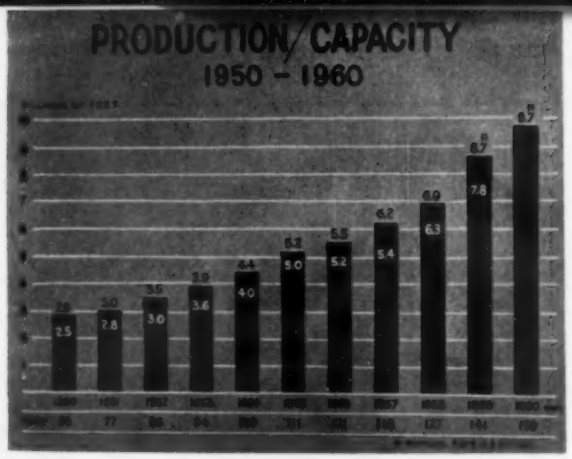



Douglas Fir Plywood Association

# The Turning Point For Plywood?

The 24th Annual meeting of the Douglas Fir Plywood Association at Sun Valley, Idaho, May 16-19, may well mark the beginning of a new era for plywood manufacturers. It isn't something that has come about suddenly, but covers a period of years of growth, changes in forests and changes in demands. One could say it was another step in growing up, but it is rather a combination of economics and the industry's long overdue recognition of the necessity of constant change.

With renewed enthusiasm, any thoughts of gloom over present market conditions were dispelled and converted into challenge to develop new products and new markets.

The meeting, in a way, was a historic session. It crystalized realization that more efficient merchandising by each mill is the salvation of the industry. It was, in fact, a school of merchandising, more clearly defining immediate problems at hand and the path that must be traveled for continued growth and development—a lesson in economics—a lesson in essentials of market research and product development as a moving force—a look ahead at national and world problems—a charge upon the industry of its own national responsibilities.

## Building today for tomorrow's markets

The impact of the importance of building new markets and better organization today, was forcefully pointed out by DFPA president, C. Henry Bacon, Jr., and executive vice-president of Simpson Timber Co., Seattle, Wash.

"The problem immediately ahead is developing new products and new markets to keep up with the changing demands and to keep pace with competitive products. The DFPA major action that will give a 'new look' to the 1960 program are, as outlined by Mr. Bacon.

**The second home.** A bold and dramatically successful campaign reaching lumber dealers, builders, real estate people, land developers, financial companies and prospective leisure home owners. Anticipated is 500,000 such units annually within immediate years ahead.

**Housing for the retired.** Today, there are over 16 million retired people. By 1975 there will be 20 million. About 80% have lower than average incomes about $2000 annually. To meet this market DFPA is developing a series of Tom-Thumb cottages for retired people.

**Mobile homes.** Growth of this industry is startling. Outselling prefabricated homes every year since World War II, they now run 14% of all single family units—will reach 20% in next three to five years.

**Marine markets.** The Wood Boat Foundation has been set up with special promotion fund to establish the fact that "Wood Is Best for Boats."

**The farm program.** Establishing plywood as an all-purpose building material for farm markets as a natural tie-in with the revolution now going on in agricultural practices: Automation and scientific material handling with new concepts in livestock housing are taking place.

**Palletized plywood bins** will become major outlets for most fruit and vegetable handling. More recent developments indicate they will also be important in cotton handling and in the tobacco industry.

**Components** will be a major market. Technical developments and research geared to rapid transition to component construction in all areas of the light construction industry is outstripping all estimates. Plywood Fabricators Service now has 31 operating members and visualizes 200 to 300 such fabricators immediately ahead in major construction areas.

**Further research reveals,** soon for release: Coatings for exterior walls and roof; foamed cores for stressed skin panels and new prefinishing ideas. The field staff has already been increased to 80 men and is expected to make 60,000 calls during the coming year.

**PRESIDENT C. HENRY BACON, Jr., following his president's address, removed his badge, donned a hard hat, and in a private capacity discussed important industry-wide problems with the plywood manufacturers.**

## The distribution problem

Putting on his own company safety hat and removing his badge, stepping down as an individual, Henry Bacon expressed his own ideas on one way to help solve the "marketing mess we find ourselves facing." He said that "DFPA cannot do the whole job of marketing. It is our job as individual manufacturers to turn the efforts of our own association into profitable business for our own companies."

He made two major points: (1) The manufacturer must equip himself to produce products in size, shape and form that the customer wants, and (2) if demand is to be increased, "it is vital that we achieve greater efficiency in getting our product to market."

KEYNOTER Erwin D. Canham, left, editor of the Christian Science Monitor, past president of the U. S. Chamber of Commerce, writer and Rhodes scholar, talked on "The Balance Sheet of Peace." Here he visits with W. E. Difford, center, and Edger N. Eisenhower, Tacoma, Wash., attorney who charged plywood producers with the need of their active part in government.

Defining the objective as one of selling the ultimate consumer, he indicated the carload buyer ultimates as: (1) Retail lumber dealers; (2) industrial users; (3) large contractors.

The solution to the latter problem, he believes, lies in recognizing the existing channels of distribution and seeing that fair compensation is paid for actual marketing services performed. The channels of distribution today, include these: (1) mill salesmen; (2) sales companies; (3) independent jobbers with warehouses; (4) manufacturer owned warehouse jobbers; (5) wholesalers; (6) commission salesmen.

Still speaking as an individual, he said that there is no reason in his opinion why any plywood manufacturer cannot use some, or all, of the existing channels of distribution and still enjoy orderly marketing procedures. Nothing would be solved by trying to abandon any of them.

In marketing of plywood, we have three services which must be rendered, he pointed out. They are: (1) Selling; (2) Credit; (3) Warehousing. "These are all essential functions in plywood distribution and whoever performs them incurs a cost for each and must be reimbursed for this cost."

**The solution, Mr. Bacon believes,** lies in recognizing each existing channel, but paying each one fair compensation—but only for the *actual* market services it performs.

Mr. Bacon stated, that as an individual, he has come to believe plywood should be sold on a net list for the carload order—subject to no so-called functional discounts. This means a one-price policy on a carload—but such carload prices would of course fluctuate depending upon each individual manufacturer. Each manufacturer after setting up his own price, would then have the choice of performing *all, none* or *some* of the marketing functions, and paying a fair compensation, or not paying any, depending upon his marketing method. "If this was done," said Mr. Bacon, "it would eliminate much of the discontent we have today in our distribution pattern."

Further illustrating his points, Bacon stated that as he sees it, the system should function in this manner:

**Selling function** – Carloads only. The manufacturer who sells the ultimate customer direct with his own sales staff, should pay no one else for this function. The manufacturer who sells either jobber, wholesaler, or a commission man with its own sales force, pays this channel of the distribution a fee for selling to the ultimate carload customer.

The manufacturer hires a sales company. It then pays this company for the entire sales function. This sales company either sells the ultimate carload customer itself, or pays a part of his fee to the jobber, wholesaler or other commission man for selling the ultimate carload customer.

Many sales companies provide financing for mills with whom they have sales contracts. Any payment which they receive for this financing is a cost of financing and not a market cost.

**Credit function** – Carrying credit for ultimate carload buyer. The manufacturer carries the credit of the ultimate carload customer and pays no one else for this function, or the manufacturer sells either jobber, wholesaler or commission man and pays them for carrying the credit of the ultimate carload buyer, or the manufacturer hires the sales company to perform the sales and credit function and pays this channel for this credit service.

The sales company then either carries the credit or pays the jobber, wholesaler, or commission man for this function. This credit function involves the service of carrying the account of the ultimate customer. It should not be confused with the cash discount historically allowed to all buyers who discount their bills.

**Wholesaler warehouse function.** In addition to direct carload business sold by the jobber, most manufacturers, "I believe, want their products to be widely available to the ultimate consumer buying less than carload quantities." Such customers include retail building materials dealers, industrial users and contractors. This requires that plywood be warehoused in the major trading areas throughout the country. Those manufacturers who want this marketing service can either:

Own their own warehouses and pay no one else for this function;

Hire an existing company in this business and pay them for making investment in inventory and warehousing their products, and selling them to the ultimate customer."

Bacon stated that in his own opinion, such a marketing procedure would give the manufacturer the choice of how he wants to perform the marketing function and at the same time keeps in effect all existing channels of distribution, compensating each for the actual marketing services he performs.

**Price-at-time-of-shipment.** Here is another major problem that directly affects plywood sales. In his opinion, Mr. Bacon stated that all big end-use buyers are almost unanimous in desiring a firm price policy. They say it is impossible to make adequate cost projections in their own business on the basis of "price-at-time-of-shipment."

He stated that "ours, I believe, is almost the only industry in the United States which substantially uses this method of selling." In his own experience he has encountered many instances where big builders have shifted to other materials because they were unable to get a firm price.

"Our company feels these are serious problems," said Mr. Bacon, "and in my opinion they are even greater threat to further expansion of plywood sales than is outside competition.

"We are spending close to $6 million annually through DFPA to broaden our markets but because of dissatisfaction, the middleman has often become a major roadblock to further expansion because of our distribution policies." He said that he believed if each manufacturer would figure out a way to fairly compensate the middleman for his services, "we can get him back on the team." "We must find ways of giving the customer what he wants as he wants it, through orderly and efficient distribution channels. The risks of failure here are enormous."

*(Continued on next page)*

## Challenges of the new building market

Putting the challenge of staying in the home construction market squarely up to the plywood manufacturers, Alan Brockbank, Salt Lake City, Utah, realtor and builder and past president of the National Association of Home Builders, held out these challenges:

**Use of components must increase.** The plywood industry must anticipate the builder's needs for the months and years ahead. We must have prefinished, durable surfaces that will last for years. Dimensional stability of wood must be achieved, and "if you do not build components, or parts to fit components, you will not long be in business."

**Fastening methods must be improved.** Total on-site labor costs must be reduced and we must achieve an erection time of 5-day maximum, ready-to-move-in. Probably touching imaginations with the most impact was Mr. Brockbank's statement that "we must design and build new excitment into homes. We must make them so interesting and exciting that people will prefer them to new automobiles. If we do this we will largely overcome today's market resistance to the higher interest rates and land costs, both of which we will have with us."

**People do not buy houses,** they buy homes, he said. "There is a big difference. A home constitutes shopping facilities, recreational facilities, schools, churches and transportation facilities—all of which must be considered."

He further asserted that from now on the name of the manufacturer must be on the product and the builder will no longer take full responsibility. Together, "we should promote the greatly reduced total weight of wood houses, for wood has the advantage of lighter weight." He said in effect, that other than public whim, there is no reason for heavily concentrated weight in houses.

**You can charge us more** than you are presently doing for materials for homes, he said, *if* it is possible to put the house up for a reduced in-place cost. We cannot longer afford the high prices of hand labor in piece-by-piece construction. Neither, he stated, can the builder longer afford to buy large tracts and carry the costs for months and years ahead, sell the houses under cost and pay the high interest rates and other costs presently involved. Therefore our goal is a 5-day maximum for house construction, ready to move in.

**The greater factor** on the increased use of lumber and plywood products will be in the ability of that industry to adapt itself to the making of components, or parts for components, that fit exactly. This will involve more precision of manufacture, shipping of exact lengths and sizes. Competing products will and are doing this—and if you don't "you will not long succeed."

**THE INDUSTRY FACES** new home developments that will require greater product quality, S. F. Slaughter, left, Lu-Re-Co., and Alan Brockman, Salt Lake builder, reported.

## Components are growing in volume

S. B. Slaughter, Jr., first vice president of Lumber Dealers Research Council and president of N. R. Homes, New Richmond, Wisconsin, forcefully pointed out the unmistakable trend to components.

We have two types of component fabricators fast developing, he said. The Distributor fabricators who will eventually number 200 to 500 across the country, serving wide trade areas. The other is the dealer component fabricator who serves his own local area.

"We must look at the home business much as we do at the automobile business. There are several price lines depending upon size and furnishings. You can buy a Ford or a Cadillac and get any style or type that you want from component fabrications.

Statistically, he stated that the home construction industry is second only to the food industry. It accounts for consumption of:

15% of the employment
20% of steel
25% of aluminum
30% of the flat glass
71% of lumber and plywood
87% of rock products (cement).

## "It takes guts to price at a profit"

The total concept of marketing has been changing and is becoming more exacting, said Richard Sargent, vice president and general marketing manager, Major Appliance Division of Westinghouse Electric Co. Today the marketing manager, in his new profession, is responsible for market research, short and long range, production schedules, warehousing, shipping, pricing at a profit, philosophy of distribution and sales policies in line with distribution. He is responsible for developing the sales program, advertising and merchandising and sales training. General sales manager and advertising personnel report to this new total marketing man.

**Product planning** is also new science and the product planning manager must bring to the marketing manager the following information: The ideas for a new product—its sales potential, volume anticipated, cost today, the money involved in capital equipment, how long it will take to get it into production, volume that can be produced on a 2-shift basis, marketing and manufacturing costs, costs to distributors and profit expected, where will it be in 3, 5, 7 years from now.

**Pricing must start** as an idea goes on the drawing board. Engineers are advised the amount of money they can have for development and manufacture so they know what they will have to work with. The entire approach is to price-at-a-profit from inception. It is a new approach and a challenging one—and it "Takes guts to price at a profit." Of course, he said, competition may even then cut the price on you in spite of all of your engineering approach.

**Training of sales staff** is of utmost importance. Sales personnel must be trained inside as well as outside, and the hardest job is training of your own people. Training men on the job in their proper selection of distributors and dealers is as important as training them with complete knowledge of their products. Additionally each should know well his immediate supervisor's job and responsibilities of those on up the line. He is trained on the difference in profit and loss and how to read a balance sheet.

*(Continued on next page)*

MERCHANDISING AND SALES techniques were presented by William Dixon, left, Dow Chemical Co., and Richard Sargent, appliance division of Westinghouse Electric Co.

EXPLODING city populations and their effect on outdoor recreation were discussed by Will Rogers, Jr., left, shown talking with B. V. Hancock, Cascades Plywood Corp., Portland, Ore.

U. S. DEFENSE SITUATION was portrayed by Fred C. Foy, right, president and board chairman of Koppers Co., who talks with DFPA executive vice-president D. E. Difford.

When such a man goes out to write an order, he then approaches his job differently. He looks at it as a whole —what effect will it have on production, upon the company, upon himself if he should move a step up. It is a fundamental procedure and brings definite results.

Ideas are important and all people should be encouraged to bring in their ideas. We have found that lots of good ideas come from people who are not necessarily supposed to supply the ideas and that not all good ideas come from those people who are supposed to have them. In a total organization, lots of people can contribute toward a successful product.

## Salesmen must listen to sell

Are you listening? You have not converted a man because you have silenced him. William Dixon, general sales manager of Dow Chemical Co., said.

Since marketing is a science of getting goods from producer to market, it is in essence a man-to-man sort of thing which boils down to practical human relations. It demands conscience and constant effort to keep the feel of the pulse of the public. Listening is important.

In marketing, Mr. Dixon said, "we must have empathy—the projection of one's own personality into the personality of another," in order to understand him better. "A good listener," he said, "can speed up the process of a customer's decision-making by actually encouraging his expression of feeling, rather than trying to supress them with facts, logic, sales-pitches, memorized - counter arguments of soothing reassurance.

**Customer is the boss.** But he stated that, "In a buyer's market, the successful company will be customer-directed and customer-dictated." To achieve this attitude, it is essential that we listen to what the customer is saying. "You might say we must become customer oriented," but this does not mean we become "patsies" for the customer. Skilled listening enables us to sort out the important from the unimportant, and in listening there lies a wonderful paradox.

"It is not necessary to allow any vague notion of selfishness to enter into this picture. As listeners we can be as selfish, grasping, greedy, practical minded and as avaricious as we like, because the more we take from the speaker through listening, the more he will give."

We have yet to learn on a grand scale how to use the wonders of speaking and listening in our own best interests and for the good of all our fellows." It is the finest art still to be mastered by men for "we are a noisy lot."

After listening, comes the time for action. Sometimes in the heart of this action we interpret silence from the target as an area of approval. Here is need for continued humility for "you have not converted a man because you have silenced him."

## Plywood industry growth is inevitable

"Whoever owns timber on the west coast is going to be economically forced to produce plywood," W. E. Difford, DFPA executive vice president, said. Once they have made the decision, then it is our job to see that they become producers of quality plywood.

Mr. Difford extended an invitation of cooperation between plywood manufacturers, adhesive producers and the builder to join in joint efforts in working out the many problems of product development, production methods and marketing.

**A box score** on the softwood plywood industry today was presented. The facts:

Sixteen new mills were added during the year of 1959.

Nine new mills have been added so far in 1960.

One hundred fifty-two plants operating during the first half of 1960.

One hundred fifty-nine plants will be operating by the end of the year.

First Quarter Production 1960 was two billion sq. ft., up 14.4% over same period of 1959.

Production for 1960 is presently estimated at 8.5 billion sq. ft.

First Quarter new orders were 1.9 billion sq. ft., down 3.3% from same period in 1959.

Capacity by the end of 1960 will be 10 billion sq. ft.

Plywood per new house start in 1950 was 400 sq. ft.

Plywood per new house start in 1960 will be 2,600 sq. ft.

PROBLEM: To continually develop new markets.

### Safest Plywood Manufacturing Operations

Division I—up to 100,000 man-hours of exposure
Hult Lumber Co., Junction City, Ore., frequency rating: 0.0.
Allen Logging & Veneer, Port Angeles, Wash.: frequency rating 0.0.

Division II—100,000 to 500,000 man-hours
Simpson Redwood Co., Klamath, Calif., 3.32.

Division III—500,000 man-hours and over
U. S. Plywood Corp., Roseburg, Ore., 2.91.

Division IV—Showing greatest improvement
Allen Logging & Veneer, Port Angeles, Wash.
Reduced rating 18.83 in 1958 to 0.0 in 1959.

# West Coast Particleboard Association Established

William F. Forrest, above, president of Pacific Plywood Co., Dillard, Ore., has announced establishment of West Coast Particleboard Association of which he has been elected president.

Principal purpose of the association, Mr. Forrest said, is to set up standards for manufacturing of particleboard and thereby assure the continued growth of this important West Coast industry.

Charter members of the new association are Brownsville Particleboard, Inc., Brownsville, Ore.; Pacific Plywood Co., PACQUA Division, Dillard, Ore.; Willamette Fiber & Chipboard, Inc., Sweet Home, Ore., and Haskins Wood Products, Oreg. Ltd., Swisshome.

The association has adopted an association standard for floor underlayment grade particleboard. Mr. Forrest said the standard is based on years of field usage and laboratory tests of particleboard underlayment products.

"This is a standard we feel is usage-proved and will give the customer the satisfaction he deserves," said Forrest.

The West Coast Particleboard Association members, through years of manufacturing and marketing experience have found extreme satisfaction and high performance of their products wherever used.

In addition, the group adopted a certified grade stamping program which will identify the product and assure the buyer of a quality product, when bearing the association stamp, Mr. Forrest said.

**Standards.** Steps are being taken to secure a responsible independent testing agency to administer the quality certification program for the various grades established. Standards will be set up for other grades being manufactured.

Other officers of the West Coast Particleboard Association are vice-president, Harold Haskins of Haskins Wood Products, Oreg. Ltd.; treasurer, Joseph E. Clark, president of Brownsville Particleboard, Inc., and secretary, John Tyner, president of Willamette Fiber & Chipboard, Inc.

The association, at the present time, is seeking an executive director who will be employed for full time duties with the association.

Charter members of the association represent a total annual particleboard production capacity in excess of 200 million square feet (⅜-inch basis). Other West Coast particleboard manufacturers will be urged to join the association.

Mr. Forrest said leaders of West Coast Particleboard Association feel that this group has the same relationship to the recently formed National Particleboard Association as the West Coast Lumbermen's Association has to the National Lumber Manufacturers Association, and they will continue their very active support of the national group, he added.

Forrest said, "The West Coast Particleboard members have been able to maintain a uniform high quality of production due to the inherent superior characteristics of Douglas fir, and, therefore, make it advisable to promote the advantages of particleboard manufactured by members of this group." ■■

# Research Men Study Use Of Vibrational Energy

**SIREN TO GENERATE** vibrational energy is assembled at Corvallis laboratory by engineers, from left Charles O. Morris, Stanley E. Corder and George H. Atherton.

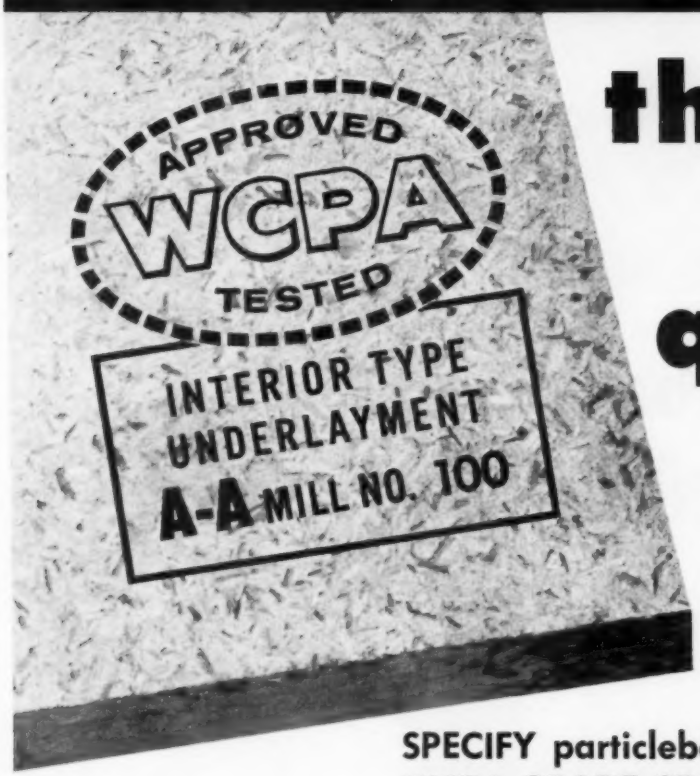
Effects of vibrational energy in the wood industry are being studied at the Oregon Forest Research Center in Corvallis, Ore.

Leif D. Espenas, director of the center, says final results of the exploratory investigations will not be available for many months. However, results of a preliminary survey are included in a report, "Ultrasonics for Wood Industries," by Charles O. Morris, engineer at the center. Copies are available.

Applications to be explored include impregnation, penetration, absorption, drying, cutting, heating, testing, particle reduction, extraction, preparation of materials for study, dispersion of particles or glue, fraction of pulp, agglomeration and polymerization.

First to be studied are effects of frequencies up to 25,000 cycles a second on drying rate of wood, on rate of heat transfer, on impregnation of wood with preservatives, on reduction of particle size, on extraction processes, and pulp properties. ■■

# AT LAST . . . THE ESTABLISHMENT OF LONG NEEDED STANDARDS OF QUALITY FOR THE PARTICLEBOARD INDUSTRY . . .

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## *Here's how to stack it higher and faster!*

The 3 CARY-LIFT models illustrated here can help you make better use of storage space and speed up handling time. Here's how:

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A tower lift attachment (B) on the standard CARY-LIFT gives a maximum lift of 30 ft. . . . enabling you to store more lumber in less space.

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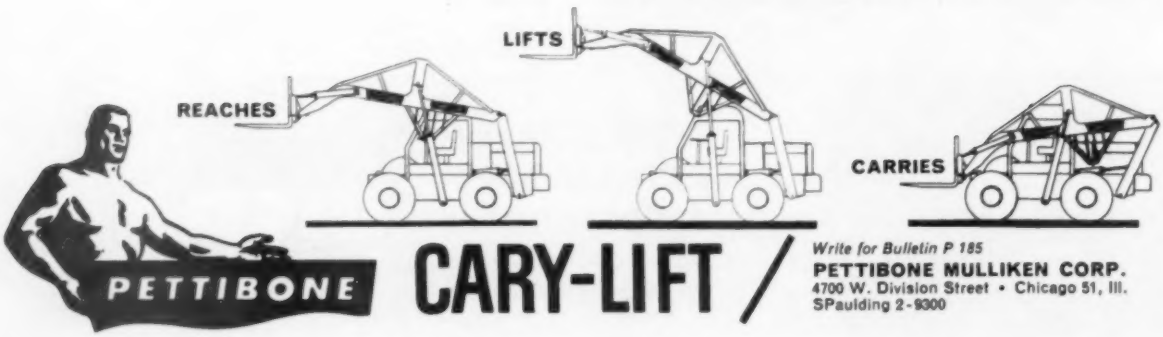
Whatever your needs are, there is a Pettibone CARY-LIFT model to fill them...available in 6,000 to 70,000 lbs. capacity...with attachments for every conceivable handling job. We invite your inquiries.

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# LUMBER PRICES

## Douglas Fir

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|---|---|---|
| 1x8 | Utility S4S KD | $ 50- 55.00 |
| 2x4 | Construction Dimension S4S KD | 85- 87.00 |
| 1x4 | C&Br VG Flooring KD | 180-185.00 |
| 1x6 | C&Br Drop Siding KD | 155-160.00 |
| 1x6 | C&Br S4S KD | 170-175.00 |
| 1x8 | C&Br S4S KD | 170-175.00 |
| 1x10 | C&Br S4S KD | 175-180.00 |
| 1x12 | C&Br S4S KD | 215-229.00 |

**Construction Timbers and Plank**

| | | |
|---|---|---|
| 3x12 | 6-20 feet | $ 95- 98.00 |
| 3x12 | 22-24 feet | 100-103.00 |
| 3x12 | 26-32 feet | 108-113.00 |
| 4x4 | 8-20 feet | 96- 99.00 |
| 4x4 | 22-24 feet | 101-104.00 |
| 4x4 | 26-32 feet | 110-115.00 |
| 6x6 | 8-20 feet | 95- 98.00 |
| 6x6 | 22-30 feet | 102-105.00 |
| 6x6 | 32-40 feet | 117-120.00 |
| 8x8 | 8-20 feet | 94- 97.00 |
| 8x8 | 22-30 feet | 99-102.00 |
| 8x8 | 32-40 feet | 114-117.00 |
| 6x6, 8x10, 10x10, 12x12 | 8-20' | $92- 95.00 |
| 6x10, 8x10, 10x10, 12x12 | 22-30' | 97-100.00 |
| 6x10, 8x10, 10x10, 12x12 | 32-40' | 112-115.00 |

**Construction Dimension (Green)**

| | | |
|---|---|---|
| 2x4 | 6-24 feet | $ 77- 79.00 |
| 2x6 | 6-24 feet | 77- 79.00 |
| 2x8 | 6-24 feet | 77- 79.00 |
| 2x12 | 6-20 feet | 78- 80.00 |

**Standard & Btr. Boards (Green)**

| | | |
|---|---|---|
| 1x4 | 6-20 feet | $ 65- 68.00 |
| 1x8 | 6-20 feet | 65- 68.00 |
| 1x12 | 6-20 feet | 66- 69.00 |

## Douglas Fir Plywood

¼-inch AD S01S $ 64.00

## Southern Pine (KD Stock)

**Vertical Grain Flooring**

| | BB | C | D |
|---|---|---|---|
| 1x4 | $225.00 | $215.00 | $155.00 |

**Flat Grain Flooring**

| | | | |
|---|---|---|---|
| 1x4 | 165.00 | 157.00 | 140.00 |
| 1x6 | 197.00 | 177.00 | 135.00 |

**Drop Siding**

| | | | |
|---|---|---|---|
| 1x6 No. 106 | 197.00 | 184.00 | 137.00 |
| 1x6 No. 116 | 197.00 | 184.00 | 137.00 |

**Boards and Shiplap**

| | 1x6 | 1x8 | 1x10 | 1x12 |
|---|---|---|---|---|
| No. 1 | $129.00 | $130.00 | $127.00 | $175.00 |
| No. 2 | 82.00 | 85.00 | 84.00 | 95.00 |
| No. 3 | 69.00 | 76.00 | 71.00 | 71.00 |

**No. 1 Dimension**

| | 12 | 14 | 16 | 18 | 20 |
|---|---|---|---|---|---|
| 2x4 | $105.00 | 105.00 | 105.00 | 119.00 | 119.00 |
| 2x6 | 101.00 | 101.00 | 100.00 | 116.00 | 116.00 |
| 2x8 | 100.00 | 100.00 | 100.00 | 115.00 | 115.00 |
| 2x10 | 112.00 | 110.00 | 109.00 | 125.00 | 125.00 |
| 2x12 | 115.00 | 112.00 | 112.00 | 125.00 | 130.00 |

**No. 2 Dimension**

| | 12 | 14 | 16 | 18 | 20 |
|---|---|---|---|---|---|
| 2x4 | $ 99.00 | 99.00 | 99.00 | 115.00 | 115.00 |
| 2x6 | 89.00 | 89.00 | 88.00 | 111.00 | 111.00 |
| 2x8 | 88.00 | 88.00 | 85.00 | 105.00 | 105.00 |
| 2x10 | 93.00 | 94.00 | 90.00 | 108.00 | 108.00 |
| 2x12 | 94.00 | 93.00 | 93.00 | 115.00 | 120.00 |

## Western Pine

### Ponderosa Pine

| Selects S2 or 4S | 4/4 RW | 5/4 RW | 6/4 RW |
|---|---|---|---|
| C Select RL | $256.93 | $264.24 | $262.56 |
| D Select RL | 165.00 | 191.46 | 184.81 |
| **Shop S2S** | **No. 1** | **No. 2** | |
| 5/4 | $144.63 | $113.13 | |
| 6/4 | 143.52 | 113.28 | |
| **Commons S2 or 4S** | **No. 2** | **No. 3** | |
| 1x8" RL | $ 92.03 | $ 72.51 | |
| 1x12" RL | 103.52 | 78.42 | |
| 4/4 No. 4 Common S2 or 4S | | | $ 61.29 |

### Idaho White Pine

| Select S2 or 4S | 4/4 RW | 6/4 RW |
|---|---|---|
| Choice (C) RL | $266.58 | $296.00 |
| Quality (D) RL | 172.91 | 239.63 |
| **Commons S2 or 4S** | **Col. (1)** | **Ster. (2)** | **Std. (3)** |
| 1x8" RL | | $111.35 | $ 80.73 |
| 1x12" RL | | 138.64 | 88.13 |

### Sugar Pine

| Select S2 or 4S | 4/4 RW | 5/4 RW | 6/4 RW |
|---|---|---|---|
| No. 1 & 2 Clear RL | $273.32 | $277.53 | $281.77 |
| C Select RL | 268.50 | 268.29 | 268.33 |
| D Select RL | 186.07 | 202.65 | 198.60 |
| **Shop S2S** | **No. 1** | **No. 2** | **No. 3** |
| 5/4 | $151.69 | $115.40 | $ 83.95 |
| 6/4 | 146.45 | 114.14 | 83.67 |
| 8/4 | 166.24 | 125.58 | 85.09 |

### Larch-Douglas Fir

| | |
|---|---|
| 4/4 No. 3 Common S2 or 4S | $ 74.80 |
| 2x4 No. 1 Dimension RW&L | 81.59 |
| 2x4 No. 2&Btr. Dimension RW&L | 74.43 |

# EQUIPMENT AT WORK

FOUR ARMCO steel buildings house the new particleboard plant of Haskins Wood Products of Oregon, Ltd., near Swisshome, Ore. Largest of the structures is 90x200 feet and is 20 feet high. The plant has a capacity of 72,000 square feet, ¾-inch basis, per 24-hour shift. The plant makes a 3-layer board, with two faces and a core, in ½ and ¾-inch sizes.

• • •

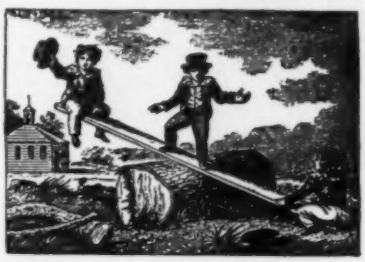
R. G. LETOURNEAU 30-ton electric log stackers at Pilot Rock Lumber Co., Pilot Rock, Ore., sort all logs by species and feed them directly to the mill without the use of a log pond. Logs stored in dry decks are sprinkled. As a result, the barker has been moved into the mill.

• • •

NELSON LOG BRONC handles and sorts fir and hemlock logs at the Smith River, Ore., operations of the Long-Bell division, International Paper Co. The Bronc is powered by a Mercury outboard engine. Operator has full control with 360 degree turns.

•

• Pacific Saw & Knife Works, Eureka, Calif., has moved to a new location on Highway 101 north of Eureka.



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LOW COST

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The Clayton steam generator maintains constant uniform press temperature throughout curing cycle. Gives instant response to load demand – with no platen temperature fluctuations, no time loss for temperature recovery. "Steam on demand" means faster production, fewer rejects. For details, write to:

Clayton MANUFACTURING COMPANY

CL 135 461 N. Temple City Boulevard, El Monte, California

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# FOREST PRODUCTS STOCKS

NOMINAL QUOTATIONS

La Salle Securities Co., Investment Securities, 208 La Salle Street, Chicago, Ill.

JUNE 3, 1960

| STOCKS | Paid 1959 | This Month Bid | This Month Ask | Last Month Bid | Last Month Ask |
|---|---|---|---|---|---|
| Ambassador Oil, Com. | $ —— | 3¼ | 3½ | 3¾ | 4⅛ |
| American Forest Products Com. | 1.00 6S | 32½ | 35 | 33 | 35 |
| Anderson Tully Co., Capt. Stk. | 20.00 | 350 | OW | 310 | OW |
| Atlas Plywood, Com. | —— | 14⅜ | C | 16 | C |
| Atlas Plywood, $1.25 Pfd. | —— | 24½ | 26½ | 28½ | 29½ |
| Biles-Coleman Lbr. Co., Com. | * | 19 | OW | 19 | OW |
| Boise Cascade Corp. Com. | .30 | 21 | 22½ | 43¼ | 45 |
| George E. Breece Lbr. Units | .05 | 2½ | OW | 2½ | OW |
| British Columbia Forest Prod., Com. | | 12½ | C | 12¼ | C |
| Brooks-Scanlon, Inc. "A" | .80 | 19 | OW | 19¼ | OW |
| Brooks-Scanlon, Inc. "B" | .80 | 19 | OW | 19¼ | OW |
| Calaveras Land & Timber Co., Com. | 2.00 | 27 | 29 | 27 | 29 |
| Calcasieu Paper Co., Com. | 1.50 | 30 | OW | 30 | OW |
| Cascades Plywood Corp., Com. | 1.75 | 29 | 31½ | 30½ | 32½ |
| Central Coal & Coke Co., Com. | 1.00 | 31 | 33 | 32 | 34½ |
| Cherry River Boom & Lbr., Com. | —— | 40 | OW | 40 | OW |
| Chicago Mill & Lbr. Co., Com. | 1.25 | 21 | 22½ | 23¼ | 25¼ |
| Cloquet Lumber Co., Com. | * | 1 | OW | 1 | OW |
| Consolidated Naval Stores, Capt. Stk. | 30.00 | 1050 | OW | 1050 | OW |
| Container Corp, Com. | 1.00 | 24¾ | C | 25⅜ | C |
| Container Corp. 4½% Pfd. | 4.00 | 86 | C | 86 | C |
| Crossett Company, Class "A" | .65 | 59 | 62½ | 60 | 64 |
| Crossett Company, Class "B" | .65 | 59 | 62½ | 60 | 64 |
| Crown Zellerbach, Com. | 1.80 | 44¼ | C | 47 | C |
| Crown Zellerbach, $4.20 Pfd. | 4.20 | 90¼ | C | 90¼ | C |
| Curtis Companies, Com. | | 7 | 8 | 7¼ | 8¼ |
| Dierks Forests, Inc., Com. | 5.00 6S | 152 | OW | 150 | OW |
| Evans Products, Com. | .50 | 13⅞ | C | 14⅝ | C |
| First Lumber Corp., Com. | —— | 8¼ | 9¼ | 11½ | 12½ |
| Fordyce Lumber Co., Capt. Stk. | 1.50 | 55 | OW | 55 | OW |
| General Plywood, Com. | | 19½ | C | 12⅜ | C |
| Georgia-Pacific Co., Com. | .50 6S | 53½ | C | 59¾ | C |
| Harbor Plywood, Com. | .40 | 53⅜ | C | 21⅝ | C |
| Edward Hines Lumber Co., Com. | 2.50 | 36½ | 38½ | 38 | 41 |
| Insular Lumber Co., Com. | 1.25 | 12 | OW | 12 | OW |
| International Paper, Com. | 3.00 6S | 100⅛ | C | 102½ | C |
| International Paper, $4 Pfd. | 4.00 | 91 | C | 91 | C |
| Keyes Fibre Co., Com. | 1.20 6S | 15¼ | 16¼ | 14¾ | 15¾ |
| Kirby Lumber Corp., Com. | 2.00 | 47½ | 49½ | 47½ | 49½ |
| Longview Fibre Co., Com. | 3.50 | 84½ | 87 | 87 | 90 |
| Louisiana Central Oil & Gas, Com. | 10.00 | 51 | OW | 50 | OW |
| Louisiana Long Leaf Lumber Co. | 5.00 | 157 | OW | 152 | OW |
| Louisiana Sawmill Co. Com. | —— | ½ | OW | ½ | OW |
| MacMillan Bloedel and Powell River Co., Ltd. | 1.40 | 16⅛ | C | 14¾ | C |
| McCloud River Lumber Co., Com. | 4.00 | 115 | 125 | 125 | 135 |
| McCloud River Railroad Com. | 3.00 | 45 | OW | 43 | OW |
| Meadow River Lumber Co., Com. | * | 225 | OW | 225 | OW |
| Medford Corp., Com. | 11.00 | 245 | 260 | 255 | 270 |
| Mississippi Land Co., Capt. Stk. | 1.60 | 15 | OW | 15 | OW |
| Northwest Paper Co., Com. | 1.50 6S | 29 | 32 | 31 | 34 |
| O. & N. Lumber Co., Capt. Stk. | 2.00 | 42 | OW | 42 | OW |
| Olin Oil & Gas, Com. | 2½ %S | 15½ | 16½ | 16¼ | 17¼ |
| Ozan Lumber Co., Com. | 4.00 | 92½ | OW | 92½ | OW |
| Pacific Lumber Co., Capt. Stk. | 12.00 | 325 | OW | 320 | OW |
| Pine Tree Mfg. Co. | —— | 50 | OW | 50 | OW |
| Pickering Lumber Co., Com. | .40 | 10⅛ | 11⅛ | 11 | 12 |
| Pope & Talbot, Inc., Com. | 1.25 | 31 | 33 | 31 | 33 |
| Pope & Talbot, Inc., Pfd. | .30 | 4¾ | | 4¾ | 5¼ |
| Potlatch Forests, Com. | 1.00 | 51½ | 54 | 54 | 56 |
| Puget Sound Pulp & Tbr Co., Com. | .80 | 24 | C | 23¾ | C |
| Richmond Cedar Works Mfg., Com. | —— | ½ | 1 | ½ | 1 |
| Richmond Cedar Works, Com. | —— | ¾ | 1¼ | ¾ | 1¼ |
| Ritter, W. M., Lumber Co., Com. | 2.50 | 42 | OW | 40½ | OW |
| Roddis Plywood, Com. | 40 6S | 18½ | 19½ | 17¼ | 18¼ |
| St. Regis Paper, Com. | 1.40 6S | 38½ | C | 41¼ | C |
| Southern Minerals Corp., Inc., Com. | —— | 3¾ | 4¾ | 3¼ | 4½ |
| Southwest Forest Indust Inc., Com. | —— | 15 | 16½ | 18½ | 20 |
| Tremont Lumber, Com. | 2.00 | OW | | OW | |
| U. S. Plywood, Com. | 2.25 | 48⅜ | C | 47 | C |
| Union Lumber Co., Com | 1.40 | 60½ | 63 | 59 | 62 |
| United States Lumber, Com. | .35 | 4¾ | 5¾ | 4¾ | 5¾ |
| Upson Company, Com. | .40 | 12 | 13 | 11¼ | 12¼ |
| Weyerhaeuser Co., Com. | 1.10 | 34½ | 36½ | 36¾ | 38¾ |
| Winton Lumber Co., Com. | 1.00 | 16 | OW | 16 | OW |
| Wood Conversion Co., Com. | .45 | 12½ | 13½ | 11½ | 12½ |
| Wooduse, Inc., Com. (Now Fersolin Corp Com.) | | ¼ | 1 | ¼ | 1¼ |
| **BONDS** | | | | | |
| Georgia-Pacific Corp Subordinated Deb., 5s due 1976 | | 86 | 89 | 86 | 89 |

*—Information not available BW—Bids Wanted S—Stock
OW—Offerings Wanted C—Last Sale on Exchange where listed or bid

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## Moore Dry Kiln Adds To Portland Facilities

A 48x120-foot building has been constructed in Portland, Ore., by Moore Dry Kiln Co. to handle increased activity in the firm's line of automatic sorting and handling equipment.

Moore facilities in Portland cover over three acres of floor space and house departments for manufacture of recording thermometers and temperature controllers, recording tachometers, dry kiln doors and carriers, roller-bearing trucks, fans, roller veneer dryers, unit heaters, finned pipe, veneer dryer feeders, automatic lumber sorters, stackers and unstackers and other lumber handling equipment, electric transfer cars and electric swedes, dry kiln paint and lumber end-coating, prefabricated dry kiln building and a variety of equipment for processing plywood and board.

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Axial Flow Blowers in most sizes from 1 to 15 HP. Price Example: 7½ HP unit, rebuilt and guaranteed, with 12" reducer and mounting feet . . . **$330.00**

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**(Used)**

| | Elec. OK AS IS 460/115 Volt | Rebuilt & Guar. 460/230-115 Volt | Rebuilt & Guar. 460/115 Volts |
|---|---|---|---|
| 3 KVA | $ 34.00 | $ 45.00 | $ 40.00 |
| 5 KVA | $ 49.00 | $ 65.00 | $ 57.00 |
| 7.5 KVA | $ 68.00 | $ 91.00 | $ 80.00 |
| 10 KVA | $ 85.00 | $113.00 | $100.00 |
| 15 KVA | $118.00 | $158.00 | $139.00 |
| 25 KVA | $181.00 | $242.00 | $212.00 |
| 37½ KVA | $230.00 | $308.00 | $270.00 |

## IDEAL LOG DUMP HOIST

**(LSM Vessel Bow Ramp Winch)**

20,000 lbs. pull at 15 feet per minute, with 15 HP, 440 Volt, Hi torque Reliance Brake Motor, Totally Enclosed. Drum is grooved for 1"-6x37 improved plow steel cable. Elec. O.K., As is . . . **$1,150** Rebuilt & Guaranteed . . . **$1,450**

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**Delco-Westinghouse Generator,** 100 K.W. continuous, 450 volt, 3 phase, 25% overload, (2 hours), with exciter.

**Westinghouse-General Electric Panel,** with complete set of meters, generator circuit breaker, voltage regulator and rheostat.

**Diesel Generator with control, as is, marine cooling . . . $2,495**

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**Diesel Generator with control, load tested, as is, radiator cooling, skid mounted . . . $3,950**

**Diesel Generator with control, load tested, overhauled with marine cooling . . . $4,150**

**Diesel Generator with control, load tested, overhauled, radiator cooling, skid mounted . . . $4,950**

CONTACT: *Bruce Schulberg*

**Zidell Machinery & Supply Co.**

**3121 S. W. Moody Avenue • Portland 1, Oregon**
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| | |
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| 180 to 359 inches per year | $10.50 per column inch |
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# "From headrig to cut-off saw, SELECTRIC integrated performance is helping us produce lumber of superior grade at lower cost"

Reports Alex Cugini, Jr. Manager
Barbee Mill Co., Kennydale, Washington

Selectric heavy duty carriage of new swept back knee design is equipped with Selectric heavy duty setworks, electronic preset and backstand control to accurately saw everything that comes out of the pond at Barbee Mill.

Selectric line bar setworks system gives operator fast, accurate push button control of resaw settings. System operates with same reversing clutch and power principles as are employed in Selectric carriage setworks.

Selectric engineered 52" cut-off saw features a special open throat designed to pass timbers 24 x 30 in size.

Situated on the shores of Lake Washington a few miles from the heart of Seattle, The Barbee Mill recently completed a major rebuilding program, following a disastrous mill fire of September 1957. Accent in the modern new mill is on an integrated operation that will increase efficiency, lower operating costs and produce lumber of better grade.

Figuring prominently in the modern production advances incorporated in the rebuilt mill are a Selectric 4 block 52" opening heavy duty carriage equipped with Selectric 15 H.P. heavy duty setworks and electronic preset, a Selectric 5 H.P. line bar setworks and Selectric cut-off saw.

"We like the way Selectric packaged efficient machinery answers to our production problems from the headrig to the cut-off saw," comments Alex Cugini, Jr., Barbee's forward-looking manager. "In accuracy, response and day to day dependability, Selectric is outperforming anything we previously had. It is giving us the kind of integrated performance we require to produce timbers of superior quality competitively priced for the Seattle market."

Barbee's experience is being repeated by an ever increasing number of mills who look to Selectric for a machinery package engineered to meet specific production requirements. One of Mill Equipment's machinery specialists will welcome the chance to check over your operation and suggest the machinery combination best matched to your production requirements. Just write or call Mill Equipment, Inc., 5219 First Avenue South, Seattle 8, Washington.

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SPECIFICATIONS:

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Requires 75 to 150 HP
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Capacity — 20 units per hour

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Nicholson Mfg. Co., Auburn, Wash.
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Timken Roller Bearing Co., Canton, Ohio
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B. F. Goodrich Co., Akron, Ohio; Portland, Seattle
Goodyear Tire & Rubber Co., Akron, Ohio; Portland; Seattle
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Scougal Rubber Mfg. Co., Seattle, Wash.
Mechanical Rubber Goods Div.—U. S. Rubber Co., New York City, N. Y.; Atlanta, Ga.; Portland; San Francisco
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E. C. Atkins Div. of Borg-Warner, Indianapolis, Ind.
R. Hoe & Co., New York; Portland, Birmingham, Ala.
Simonds Saw & Steel Co., Fitchburg, Mass.; Portland
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American Sheet Metal Works, Inc., Portland
Anderson Blowpipe & Mfg. Co., Seattle, Wash.
Archer Blower & Pipe Co., Portland, Ore., and Seattle, Wash.
California Blowpipe & Steel Co., Inc., Escalon, Calif.
Medford Blowpipe Co., Medford, Ore.
Phelps Bros., Eugene, Ore.; Williams Lake, B.C.
Rader Pneumatics, Inc., Portland; Vanc., B.C.
**BOILERS**
F. E. Balden, Portland
Seattle Boiler Works, Seattle, Wash.
**BOOM and TUG BOATS**
L. S. Baier and Associates, Portland
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Selectric engineered 52" cut-off saw features a special open throat designed to pass timbers 24 x 30 in size.

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Raybestos-Manhattan Corp., Grey-Rock Div., Manheim, Pa.
World Bestos Corp., New Castle, Ind.

**BRIQUETTE MACHINERY**
Sumner Iron Works, Everett, Wash.

**BURNERS—REFUSE**
California Blowpipe & Steel Co., Inc., Escalon, Calif.
Medford Blow Pipe Co., Inc., Medford, Ore.
Phelps Bros., Eugene, Ore.; Williams Lake, B.C.

**CARRIAGES—Riderless—automatic**
Mater Machine Works, Corvallis
Mill Equipment, Inc., Seattle
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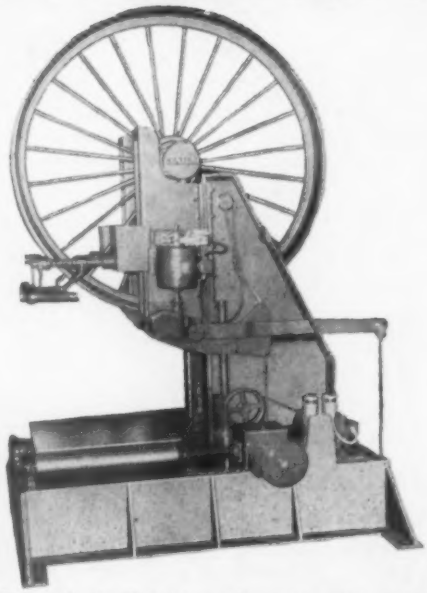

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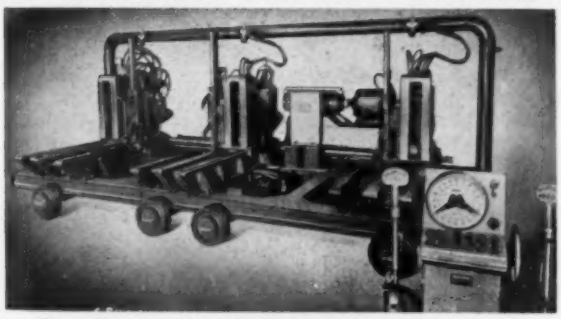

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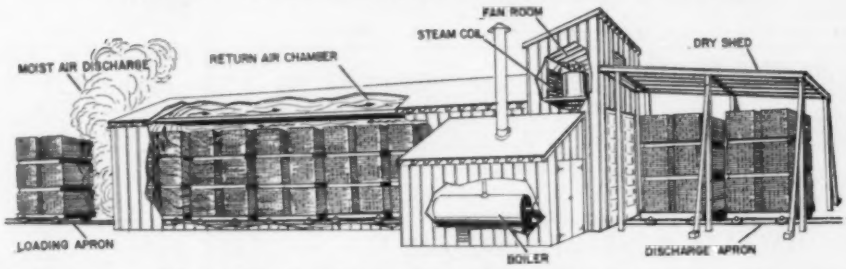


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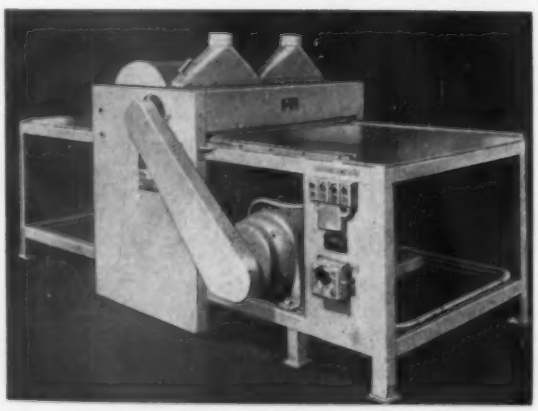

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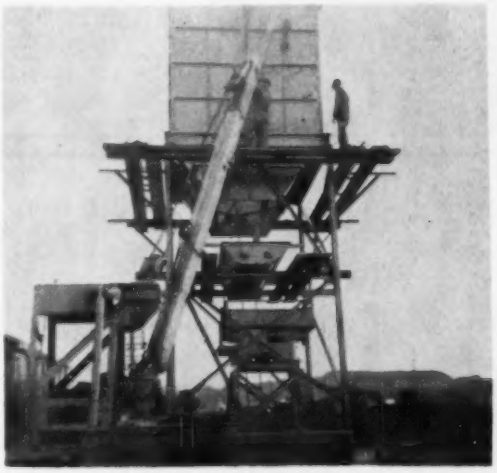

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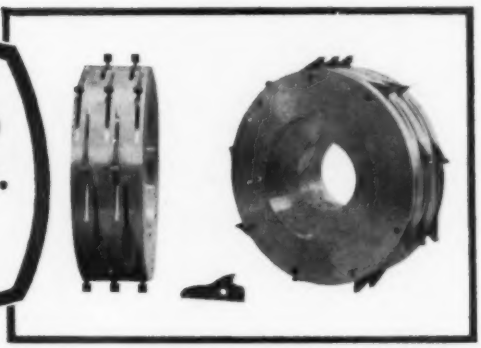

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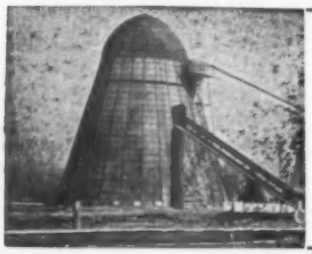

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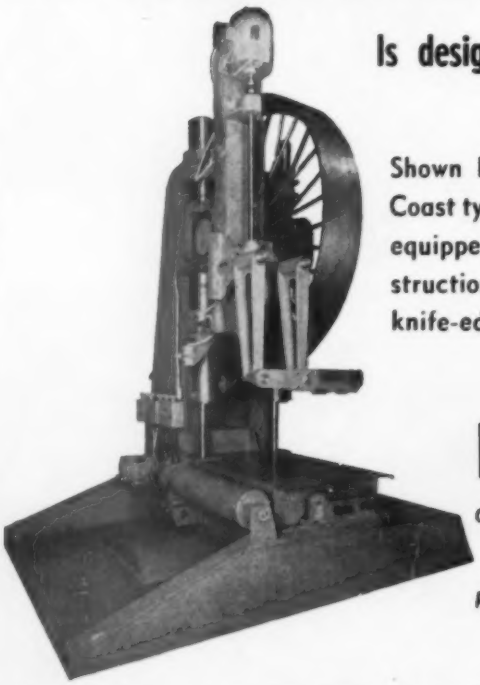

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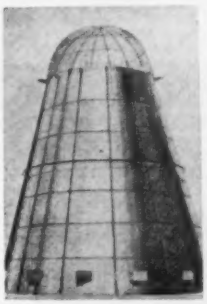
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University of California Graduate, Age 34, with large, highly automated, mixed specie WPA mill, successful managerial experience in production, utilization and administration, seeks position which preferably will permit financial participation.

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### 12" MATTISON MOULDER #226,

**Near New Condition, B.B. Elec.**
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British Columbia Timber Plant including sawmill, planer mill, dry-kilns, camp buildings, equipment and assured 30 year cut of timber. Asking price $500,000.00.

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See our list of used machinery Page 86 FEBRUARY THE LUMBERMAN

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## USED MACHINERY VALUES

15" Stetson-Ross 17-A1 10-knife elec. planer, d.p.
15" S. A. Woods 404-DM 8-k. elec. planer, d.p.
24" S. A. Woods 404-C, 8-k., d.p., belt drive
15" #512 Newman 8-k., belt drive
24' Irvington #43 11-saw automatic trimmer
23' Portland all steel saw mill trimmer, 13-saw
60" Yates-American V-60 band resaw, r.b.
72" Yates V-6 r.h. band resaw, roller brg.
84" Yates V-84 l.h. band resaw, roller brg.
42", also 52" Turner twin band resaws, r.b.
3 Moore 103' cross circ. dry kilns
10' Filer & Stowell band mill, excellent
9' Sumner r.h. band mill, roller brg.
7' Yates-American r.h. roller brg. band mill
6' Yates R-6 band mill, roller brg.
18" x 48" Wickes #1 divided roll heavy cant gang
13" x 32" Wickes #19 cant gang
36" Mill Engineering log gang
#65 Sumner roller bearing hog
12" #226 Mattison electric moulder
21' #545 Greenlee motorized d.e. tenoner
61" Yates-American 3-drum motorized b.b. sander

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1—30" Mill Engineering Log Gang with 150 HP motor, chipper, carriage, feed motor, saws and all starting equipment (12 years old)
1—24" Dornion Premier osc. Log Gang with 100 HP drive motor, chipper and motor, feed motor, saws and all starting equipment (4 years old)
1—34" (Record) Log Gang with saws, air carriage and extra parts.
1—26" (Record) Log Gang with saws, 100 HP motor and air carriage
1—6x36 I. W. Johnson Edger with 3 power shifters, 100 HP drive motor direct, feed motor, double feed rolls, air operated press rolls, 2—24" saws and all starting equipment. (4 years old)
1—32' I. W. Johnson Air Trimmer, R.H. 17 saws, BB arbors, V belt drives, 32" blades, 50 HP drive motor, steel box beam, 10' table with H78 chain and 10 HP drive
1—4 saw slasher—4' spacing, 40 HP drive motor, 2 15/16" arbors, all electric controls
1—#145 Diamond BB Hog with 100 HP motor and contrals. Extra new rotor
1—#736 Hanchett circle saw grinder motorized, late style
1—Chipper 72" 10k Carthage with 400 HP sync. motor.
1—300 amp Wilson electric welder

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250'—24" belt with trough rolls, complete with 7½ HP 68 RPM U.S. Syncrogear
100'—H122 chain complete with 5 HP 45 RPM U.S. Syncrogear
170'—1x6 round link chain with 24" Moline flights every 5' with 10 HP 30 RPM Westinghouse gearhead
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2 Log Hauls complete, each with 250' of ⅞-5 round link chain
42—3 point chairs driven with 20 HP motors and controls

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10—6x20x1 15/16" driven with 1"p RC
12—10x28x1 15/16" driven with 588 chain

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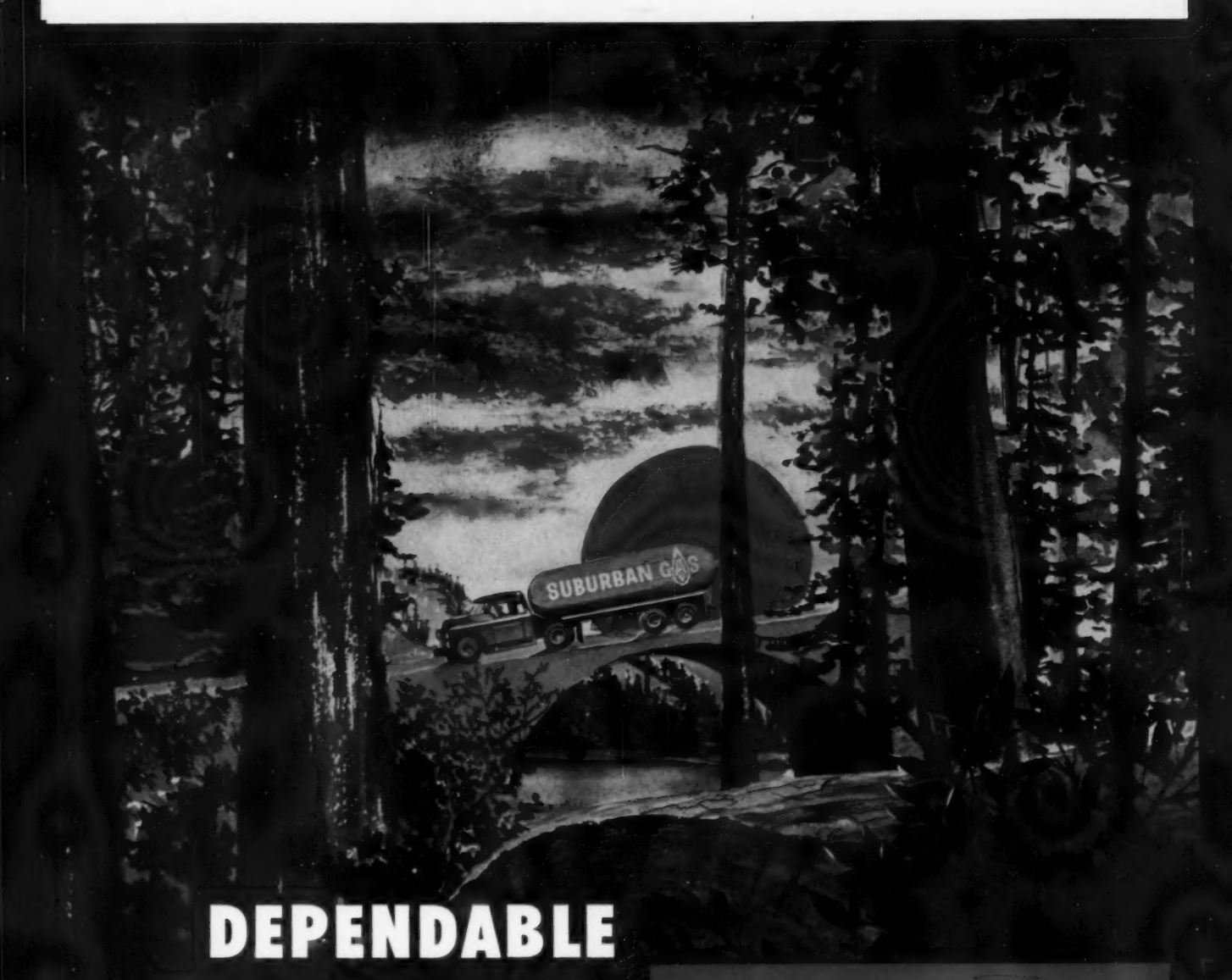


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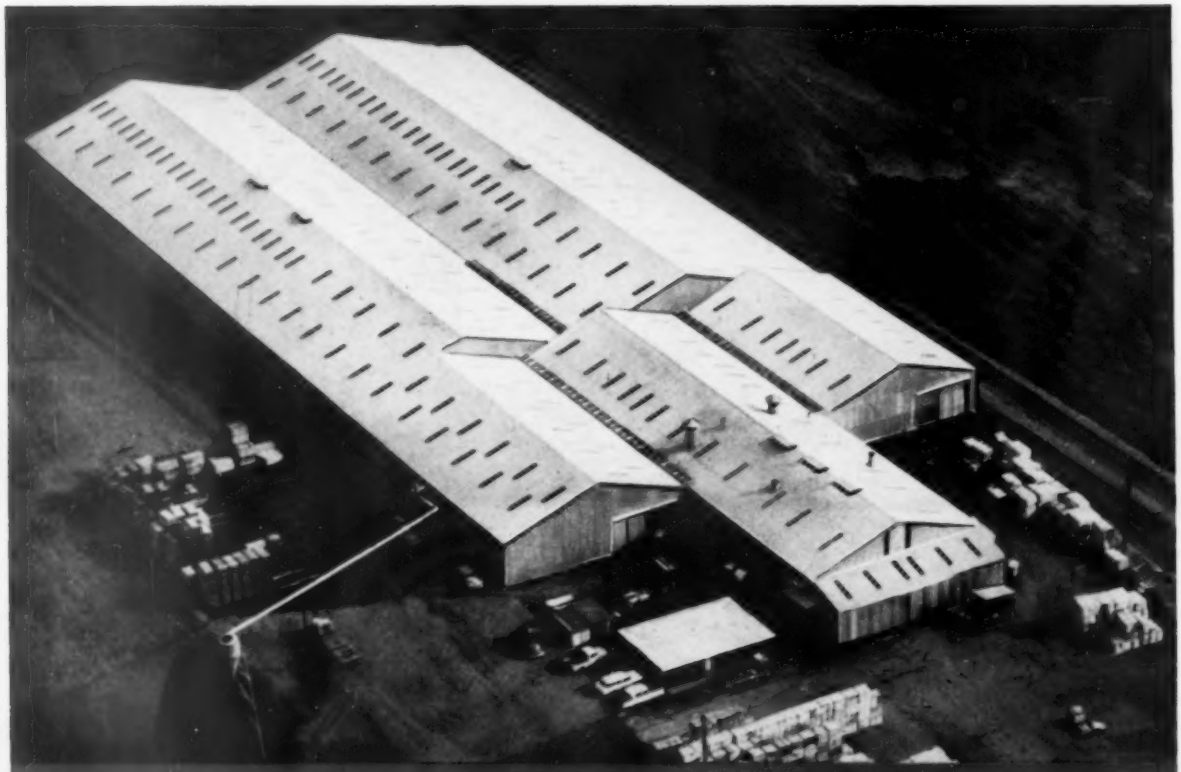
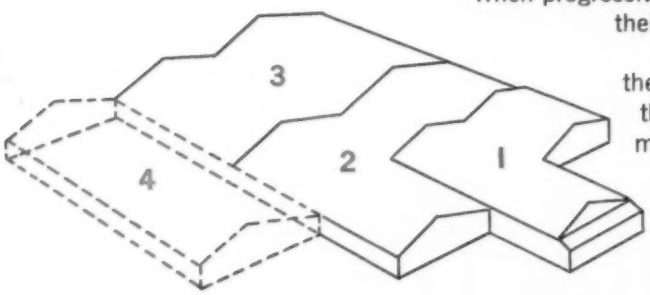


# Soulé structures keep pace with fast growing Coquille Valley Lumber Co.




When progressive Coquille Valley Lumber Company plotted their growth plans, they included Soulé Series 412 steel structures. The photo shows the present facility. In the drawing, **1** shows the original plant area, **2** shows the planer mill addition, **3** the sheathing and plywood plant and **4** indicates the future sanded plywood plant. Because of their all-bolt construction, amazing clear work area, Soulé structures can be added quickly, at very low cost. Soulé structures can help your plant grow, too. Call for a planning chat.

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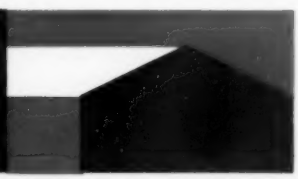

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